

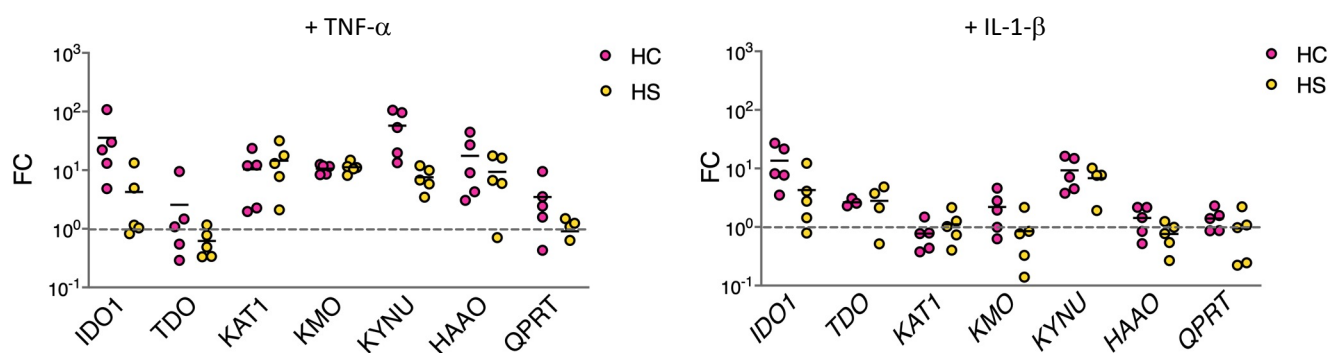


Figure S1. HS fibroblasts respond normally to *in vitro* stimulation with inflammatory cytokines. Fold change (FC) in expression of kynurenine pathway enzyme genes by primary fibroblasts from 5 HC and 5 HS patients following a 24h treatment with TNF- α (100 ng/ml) or IL-1 β (2.5 ng/ml), relative to unstimulated controls. Data are shown as scatter dot plots with means.

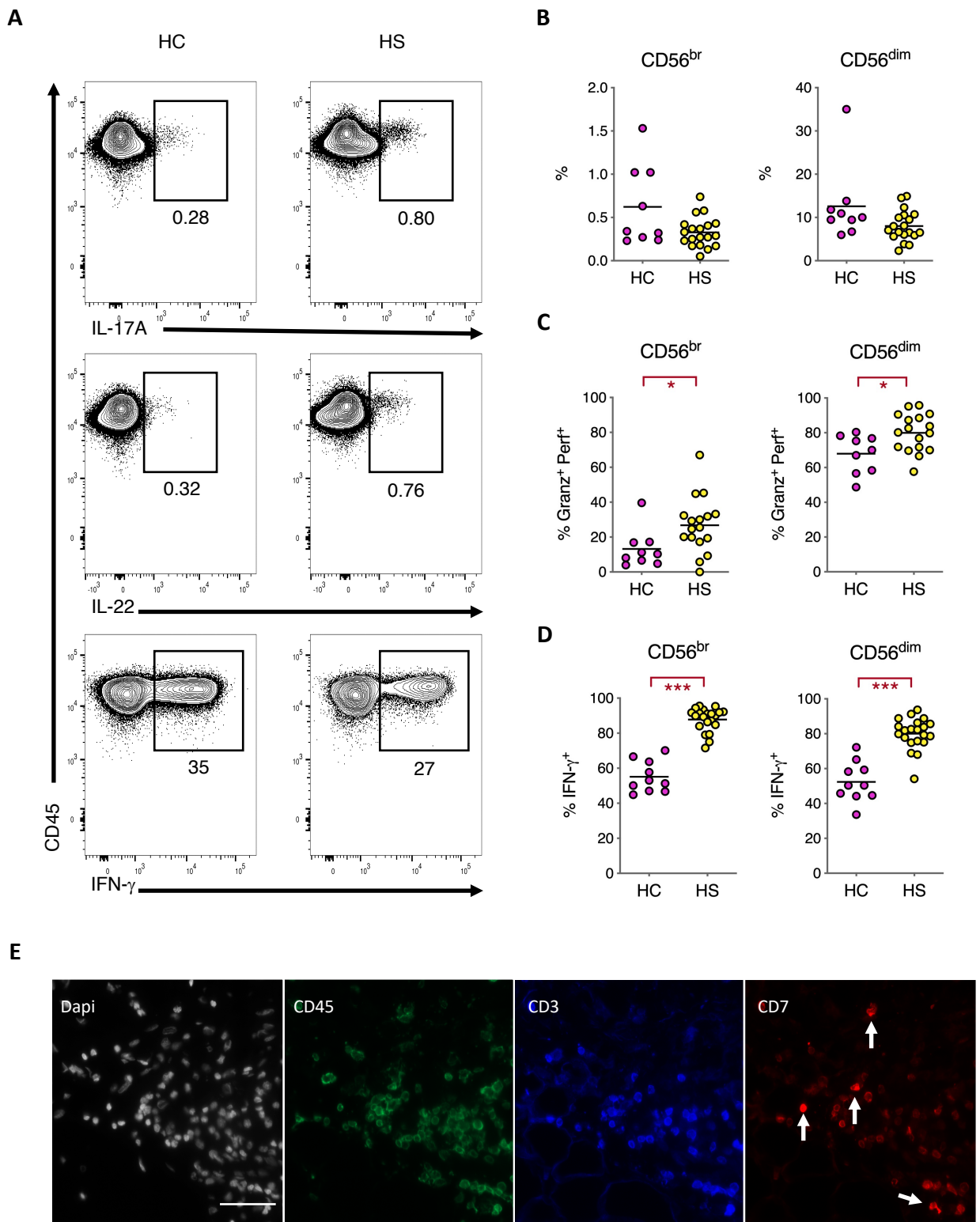
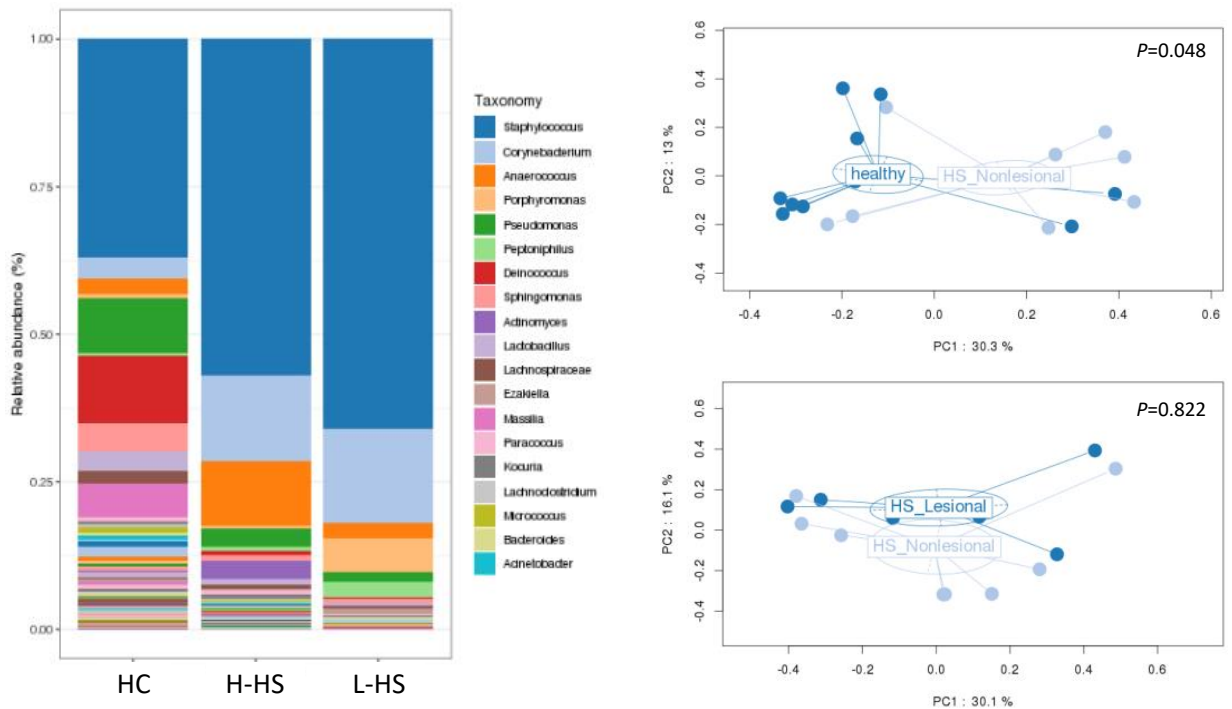


Figure S2. Immunological parameters differing between HS patients and HC controls. (A) Representative contour plots with percentages of IL-17A, IL-22 and IFN- γ producing T cells (gated as CD3⁺ CD5⁺ CD45⁺) in HS patients and HC controls, following a 3h stimulation with PMA/Ionomycin. 100,000 event per contour plots are depicted for comparison. **(B)** Frequency of CD56^{br} and CD56^{dim} NK cells, amongst total lymphocytes, in HC and HS patients. **(C)** Proportion of CD56^{br} and CD56^{dim} NK cells co-expressing Granzyme B and Perforin. **(D)** Proportion of CD56^{br} and CD56^{dim} NK cells producing IFN- γ following a 3h stimulation with PMA/Ionomycin. Data are shown as scatter dot plots with means. * $P < 0.05$, *** $P < 0.001$ by Mann-Whitney U-test. **(E)** DAPI, CD45, CD3 and CD7 staining of a representative L-HS skin section, with arrows pointing to CD3⁻ CD7⁺ NK cells. Scale bar 50 μ m.

A



B

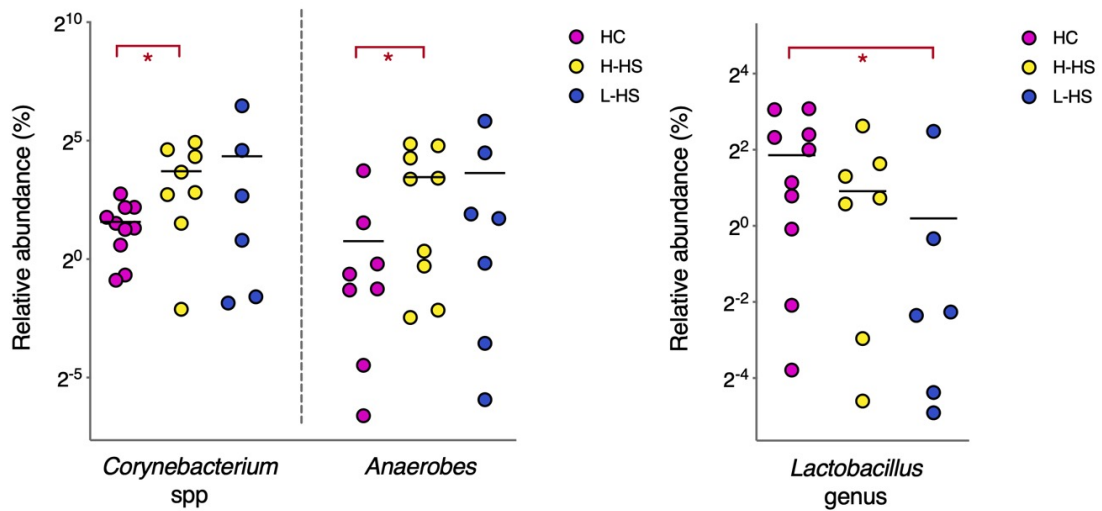


Figure S3. Changes in the bacterial composition of healthy and lesional skin microbiomes. (A) Genus distribution and PCA analysis of the bacterial species found in HC, H-HS and L-HS skin biopsies. P values by Permanova test. **(B)** Relative abundance of *Corynebacterium* spp, pooled anaerobes (*Prevotella*, *Porphyromonas*, *Actinomyces* and *Anaerococcus* spp) and *Lactobacillus* spp in HC, H-HS and L-HS skin samples. * $P < 0.05$, by Mann-Whitney U-test.

Table S1. Characteristics of study participants. (A) Metabolomic analysis of skin biopsies, assays of Trp metabolites and cytokines in plasma. (B) Transcriptomic analysis of skin biopsies and microbiota; *In 2 of the 8 HS patients, only H-HS skin samples were taken. (C) Primary fibroblasts.

A

	Healthy controls	Patients with HS
Total	20	19
Female, No (%)	12 (60)	16 (84)
Age, mean (SD)	46 (12)	32 (6)
Puncture site	Axilla	Axilla (5), Groin (8), Buttock (6)

B

	Healthy controls	Patients with HS
Total	9	8*
Female, No (%)	8 (89)	8 (100)
Age, mean (SD)	34 (7)	30 (8)
Puncture site	Abdomen (5), Leg (4)	Groin (4), Buttock (4)

C

	Healthy controls	Patients with HS
Total	5	5
Female, No (%)	5 (100)	5 (100)
Age, mean (SD)	30 (8)	30 (8)
Puncture site	Abdomen (3), Leg (1), Breast (1)	Axilla (1), Groin (2), Buttock (2)

Table S2: Relative levels of metabolites in skin samples from healthy individuals and patients with Hidradenitis Suppurativa

Table S3. Primers used for qRT-PCR

Gene	Primers
<i>18S</i>	F: CATGGCCGTTCTTAG
	R: CGCTGAGCCAGTCAG
<i>AHR</i>	F: ACATCACCTACGCCAGTCG
	R: CGCTTGGAAGGATTTGACTTGA
<i>AHRR</i>	F: CTTAATGGCTTTGCTCTGGTCTG
	R: TGCATTACATCCGTCTGATGGA
<i>CYP1A1</i>	F: AAGGGGCGTTGTGTCTTTGT
	R: ATACACTTCCGCTTGCCCAT
<i>CYP1A2</i>	F: ACAAGGGACACAACGCTGAA
	R: AGGGCTTGTTAATGGCAGTG
<i>HAAO 3</i>	F: AGGACTATCACATCGAAGAGGG
	R: ATGACCACATCCCGGTGTTTC
<i>IDO1</i>	F: GCATTTTTTCAGTGTTCTTCGCATA
	R: CATAACCAGACCGTCTGATAGCT
<i>IFN-γ</i>	F: ATTGCAGGCAGGACA
	R: GAGTGTGGAGACCAT
<i>IL-1β</i>	F: CCTGTCCTGCGTGTTGAAAGA
	R: GGGAAGTGGGCAGACTCAAA
<i>IL-17A</i>	F: ACTACAACCGATCCACCTCAC
	R: ACTTTGCCTCCCAGATCACA
<i>IL-22</i>	F: TATCACCAACCGCACCTTCA
	R: GTTTCTCCCCAATGAGACGAAC
<i>KATI, KYATI</i>	F: CAGACTTTGCCGTGGAAGCCTT
	R: GCACATTCCTGAGCGGGTCTAT
<i>KMO</i>	F: TAGCCCTTTCTCATAGAGGACG
	R: CTCTCATGGGAATACCTTGGGA
<i>KYNU</i>	F: GGGGAAGCGTCCTTGGATTAC
	R: CGTGAAGTTGTAGTTGTGACTCA
<i>QPRT</i>	F: TGGTGAAGGATAACCATGTGGTG
	R: CTGCTGCATTCCACTTCCA
<i>TDO</i>	F: GAACATCTTTTTATCATAACTCATCAAG
	R: ACAACCTTAAGCATGTTCTTTCAT
<i>TNF-α</i>	F: GAGTGACAAGCCTGTAGCC
	R: GCTGGTTATCTCTCAGCTCCA
<i>TPH1</i>	F: ACGTCGAAAGTATTTTGCGGA
	R: ACGGTTCCCCAGGTCTTAATC