Supplementary Table 1. *P. acnes* strains used in the study.

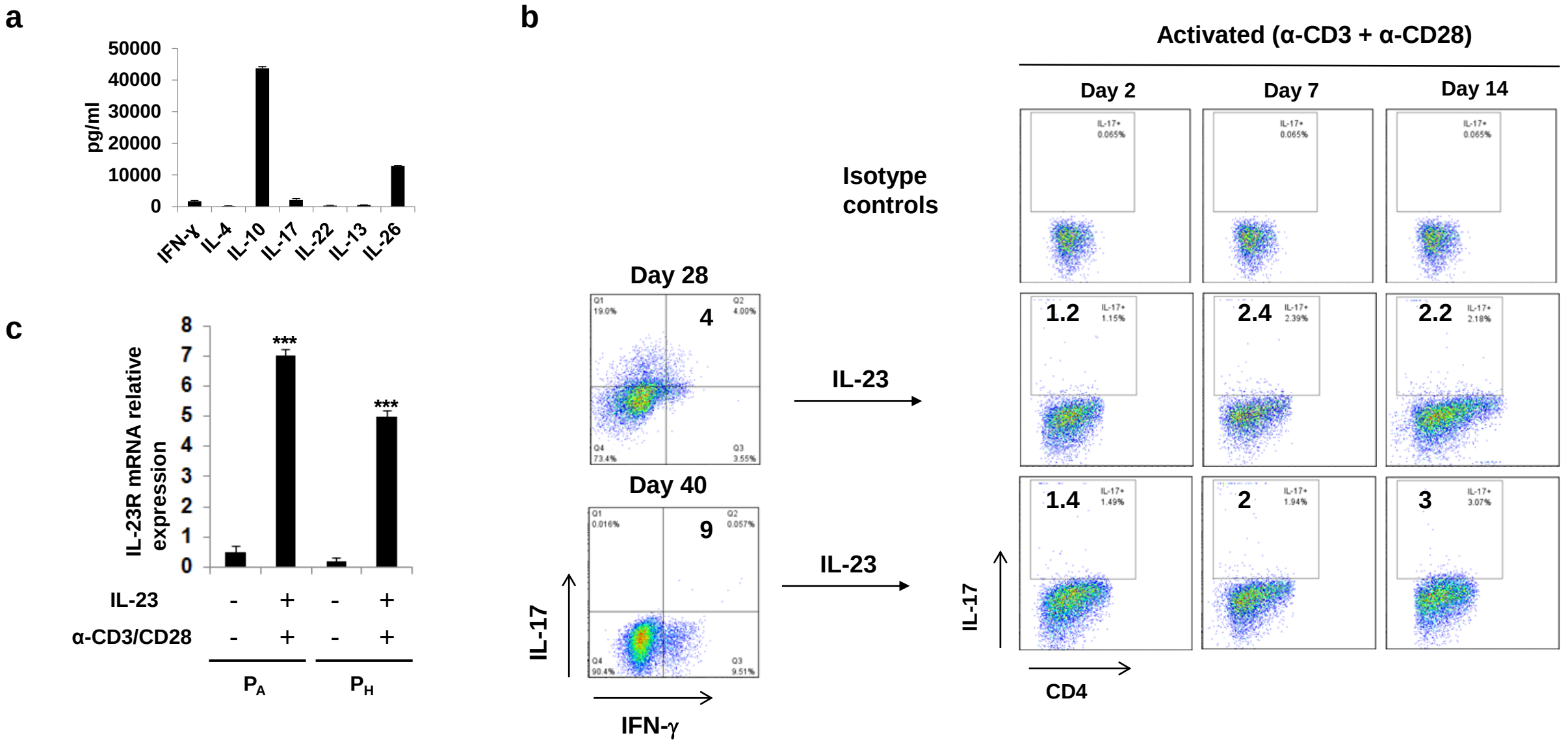
	Strain	**Ribotype**	**Phylotype**	**$MLST_4$**
		16S sequence	SNPs in core genome	Multi locus sequence typing
P_A (Acne)	HL110PA1 HL043PA1 HL096PA1	4, 5, 8	IA-2, IB-1 (p^+)	IA
P_H (Healthy skin)	HL042PA3 HL110PA3 HL110PA4	6	II	II

Supplementary Table 2. Cloning efficiency and functional retention of T cell clones.

Donor	*P. acnes* stimulus	T cell subset	Cytokine profile	Wells seeded	Established clones	Functional clones
D1	P_A - associated strain (HL096PA1)	$CD4^+$	$IL\text{-}17^+$	576	172 (30%)	34
	P_H - associated strain (HL110PA3)	$CD4^+$	$IL\text{-}17^+$	323	110 (34%)	39
D2	P_A - associated strain (HL096PA1)	$CD4^+$	$IL\text{-}17^+$	250	65 (26%)	16
	P_H - associated strain (HL110PA3)	$CD4^+$	$IL\text{-}17^+$	315	84 (27%)	18
D3	P_A - associated strain (HL096PA1)	$CD4^+$	$IL\text{-}17^+$	216	64 (30%)	26
	P_H - associated strain (HL110PA3)	$CD4^+$	$IL\text{-}17^+$	180	48 (27%)	21
D4	P_A - associated strain (HL096PA1)	$CD4^+$	$IL\text{-}17^+$	220	68 (31%)	12
	P_H - associated strain (HL110PA3)	$CD4^+$	$IL\text{-}17^+$	224	70 (31%)	17

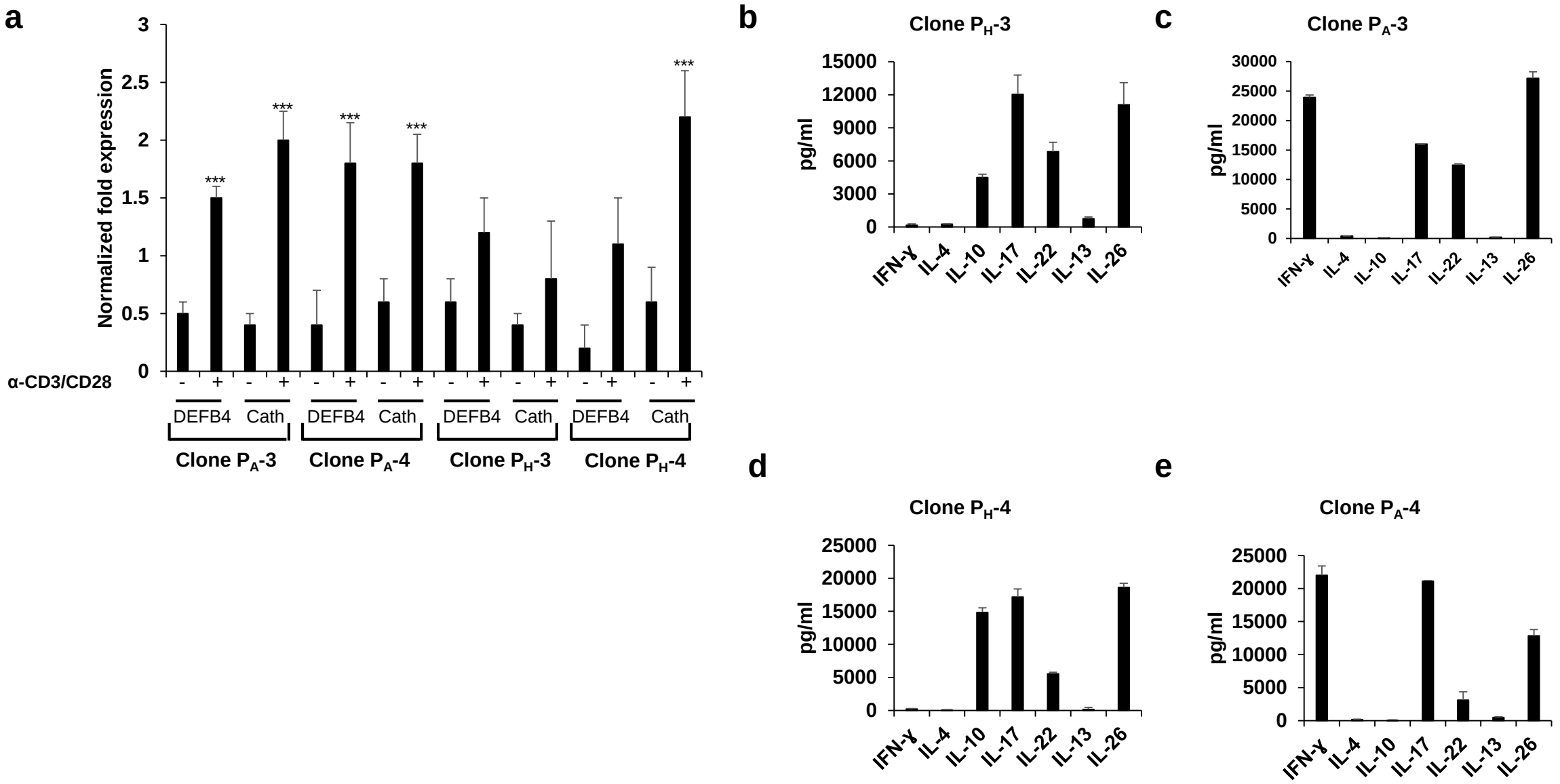
Supplementary Table 3. Primers used in the study

Gene symbol	Forward primer sequence	Reverse primer sequence	GenBank Accession number
GAPDH	TGCACCACCAACTGCTTAGC	GGCATGGACTGTGGTCATGAG	NM_001256799
IL17A	ACCAATCCCAAAAGGTCCTC	GGGGACAGAGTTCATGTGGT	NM_002190
IL17RA	CAGCGGTCTGGTTATCGTCT	AAATGCCCGCCACATAGTAG	NM_014339
RORA	GCCTTTGACTCTCAGAACAACACCG	TCTTTCCAAATTCAAACACAAAGC	NM_134261
RORC	TTTTCCGAGGATGAGATTGC	CTTTCCACATGCTGGCTACA	NM_005060
IL17RC	GCCCCATGGACAAATACATC	CCTGTTTCAAGAGCCTCAGC	NM_153461
IL-22	CTTGGTACAGGGAGGAGCAG	CCTCCTTAGCCAGCATGAAG	NM_020525
IL-26	TGAGGTGTGGGTTGCTGTTA	AGAGAGCGTCAACAGCTTGG	NM_018402
tbet	CAGCACCCTTCTAGGACACC	ACCACGTCCACAAACATCCT	XM_011524698
IL-23R	CATGACTTGCACCTGGAATG	GCTTGGACCCAAACCAAGTA	NM_144701
DEFB4	TTTGGTGGTATAGGCGATCC	GAGACCACAGGTGCCAATTT	NM_004942
LL-37	ACAAGAGATTTGCCCTGCTG	GGGTACAAGATTCCGCAAAA	NM_004345

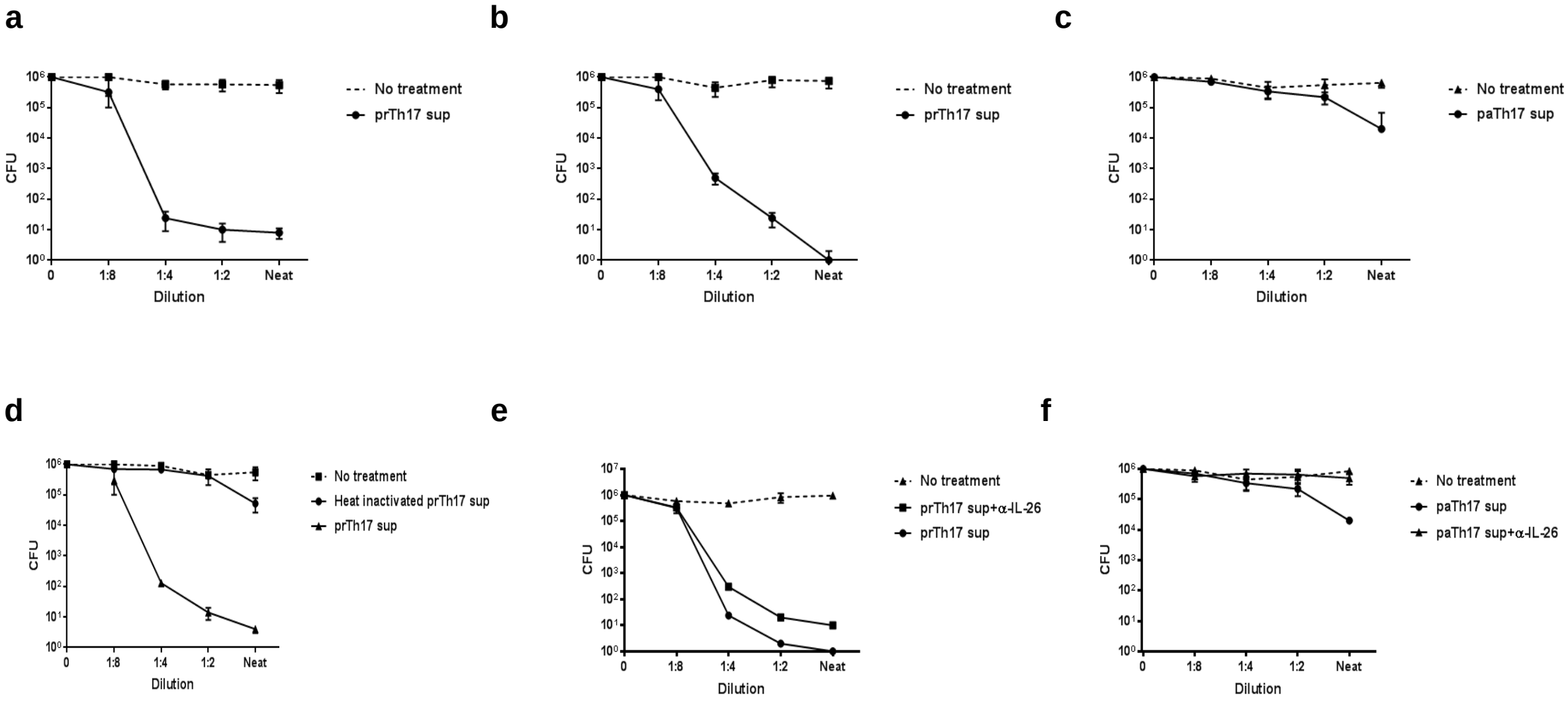


Supplementary Fig 1. The loss of the Th17 phenotype is irreversible

Day 28 and 40 P_A and P_H "exTh17 clones" from Fig. 3 above were cultured in media supplemented with 100 U/ml of IL-2 and 2ng/ml of IL-23 and stimulated with α-CD3/α-CD28 (0.75µg/ml). (**a**) Cytokine profile of a representative "exTh17" clone (**b**) Flow cytometry on "ex Th17" clones. Data is representative of more than five independent experiments. (**c**) Real-time PCR of *IL-23R* normalized fold expression in representative "ex Th17" clones. mRNA was analyzed 6 h following (-) no stimulation or α-CD3/α-CD28 (0.75µg/ml) stimulation. Gene expression was normalized to the housekeeping gene *GAPDH* and quantified by the comparative method $2^{-\Delta\Delta CT}$. Data represent mean ± SD (***$p \leq 0.001$).

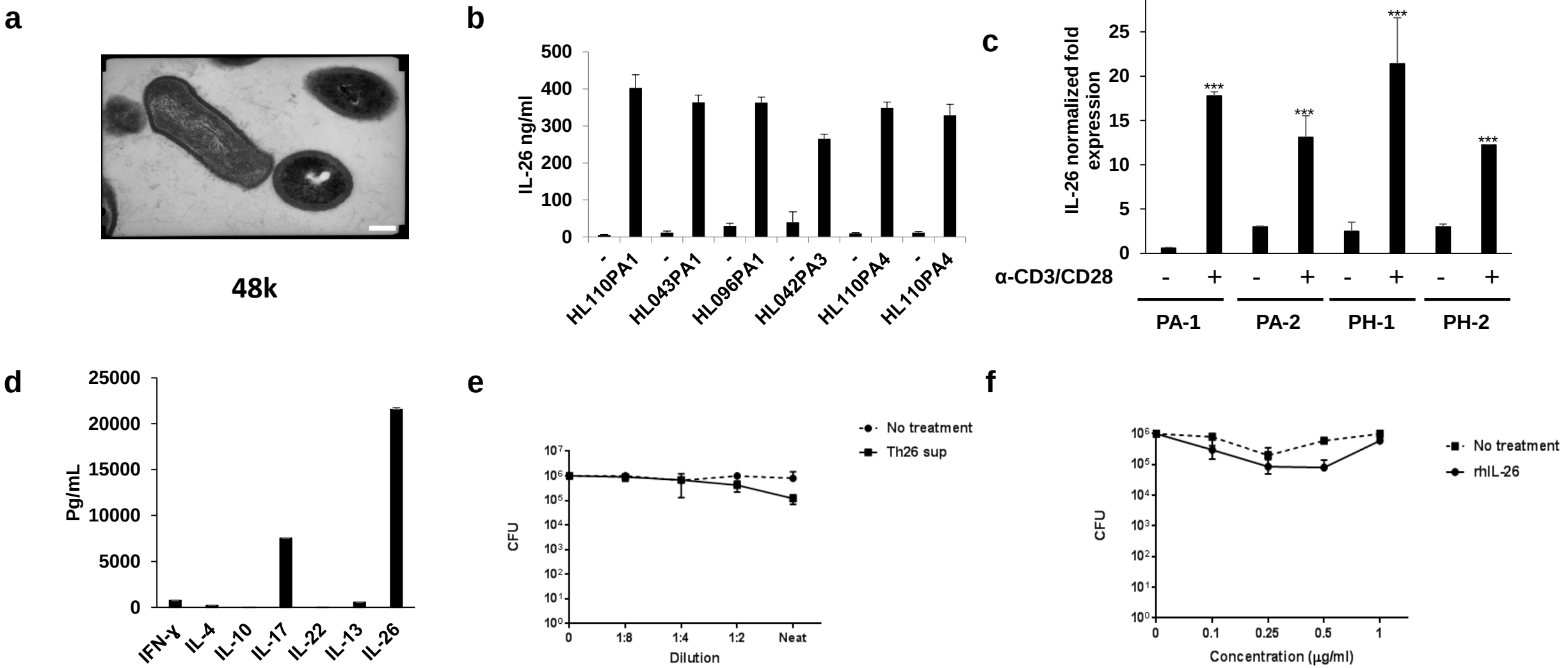


Supplementary Fig 2. (**a)** *DEFB4, Cathelicidin (Cath), tbet* and *RORC* analyzed 24 h following (-) no or α-CD3/α-CD28 (0.75µg/ml) stimulation representative paTh17 clones (P_A-3 and P_A-4) and prTh17 (P_H-3 and P_H-4) generated from two different donors (D3 and D4) are shown. Gene expression was normalized to GAPDH. Data are representative of three independent experiments (n=3). Data represent mean ± SD (***$p \leq 0.001$). (**b-e**) P_A and P_H-strain specific clones derived from donors D3 and D4 analyzed 24 h following (-) no stimulation or α-CD3/α-CD28 (0.75µg/ml) stimulation. Cytokine levels accumulated in the culture supernatants were measured using ELISA.

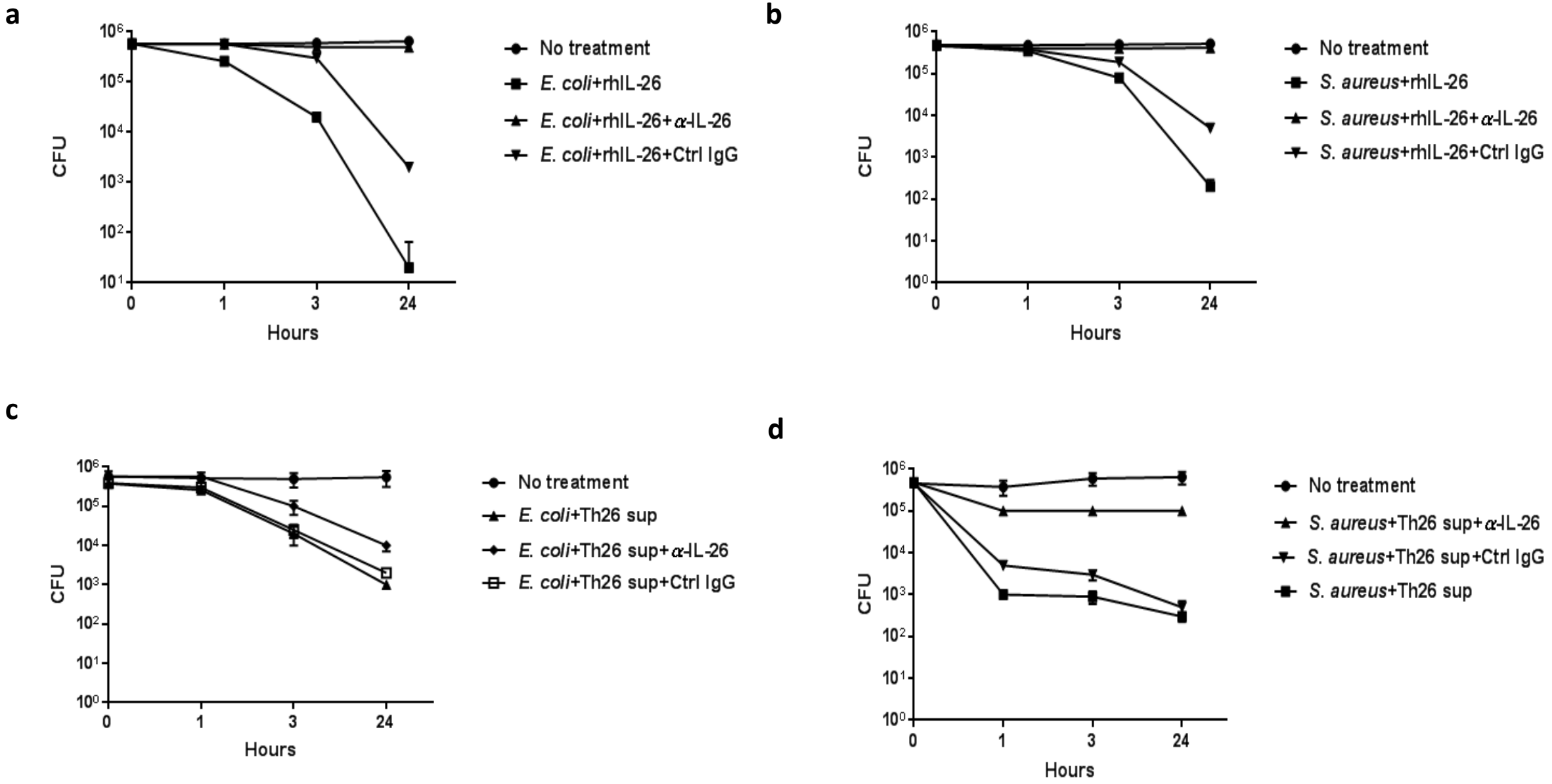


Supplementary Fig 3. **PrTh17 clones are bactericidal against different *P. acnes* strains**

Representative CFU assay results for supernatants derived from activated (**a**) prTh17 clone P_H-1 against *P. acnes* strain HL110PA1 (**b**) prTh17 clone P_H-1 against *P. acnes* strain HL043PA1. (**c**) paTh17 clone P_A-2 against HL110PA3. (**d**) Supernatants derived from prTh17 clone P_H-2 were heat inactivated for 30 minutes at 60^0C prior to being used in CFU assays against strain HL110PA1 (**e-f**) Supernatants derived from clones prTh17 (P_H-2) and paTh17 (P_A-1) were incubated with 10µg/ml of neutralizing anti-IL-26 mAb or an isotype mAb for 12 h at 4^0C prior to CFU assay against *P. acnes* strain HL042PA3. Data shows average CFU from three independent experiments (n=3), error bars are mean ± SD.



Supplementary Fig. 4. Natural IL-26 released by Th17 clones lacks antimicrobial potency against *P. acnes*. (**a**) TEM micrographs of *P. acnes* after 3 h incubation with media. Scale bar = 0.5µm. (**b**) IL-26 cytokine levels in PBMCs unstimulated (-) or stimulated with P_A and P_H strains (1 MOI). Experiments were performed in triplicates. **(c)** Real-time PCR of *IL-26* expression in clones analyzed 6 h following (-) no or α-CD3/α-CD28 (0.75µg/ml) stimulation. Data are representative of three independent experiments (n=3). Data represent mean ± SD (***$p \leq 0.001$). (**d**) A "Th26" clone was stimulated with α-CD3/α-CD28 (0.75µg/ml) for 24 h and cytokine levels were measured using ELISA (**e-f**) Th26-derived supernatants and rhIL-26 (0.1-1µg/ml) were tested in CFU assays against *P. acnes* strain HL096PA1 (n=3), error bars are mean ± SD.



Supplementary Fig. 5. Recombinant human IL-26 and supernatants derived from a Th26 clone kill *S. aureus* and *E. coli*. (a-b) *S. aureus* and *E. coli* were incubated with neutralizing anti-IL-26 (1µg/ml), rhIL-26 (1µg/ml), control IgG (1µg/ml) and undiluted (neat) supernatants from "Th26 clone". Bacteria and treatments were incubated for 1, 3, and 24 h. Remaining bacteria were serially diluted and plated for enumeration. Data shows average CFU from three independent experiments (n=3), error bars are mean ± SD.