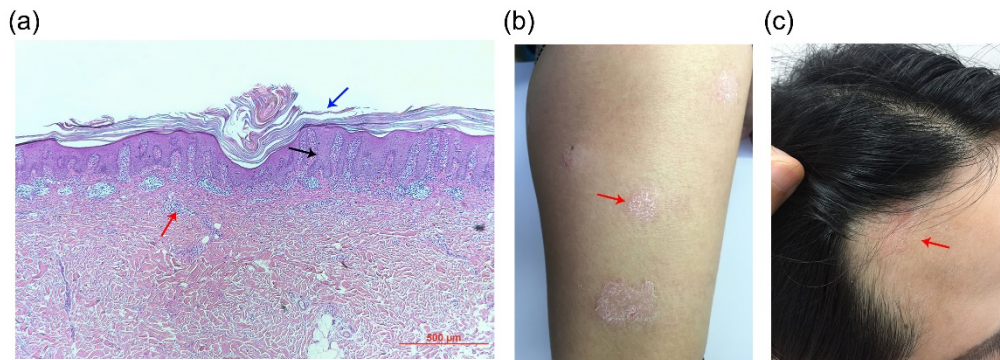
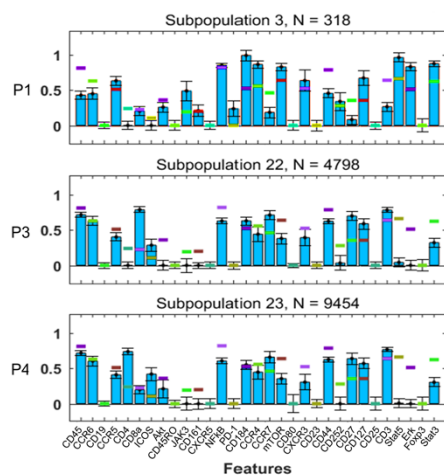


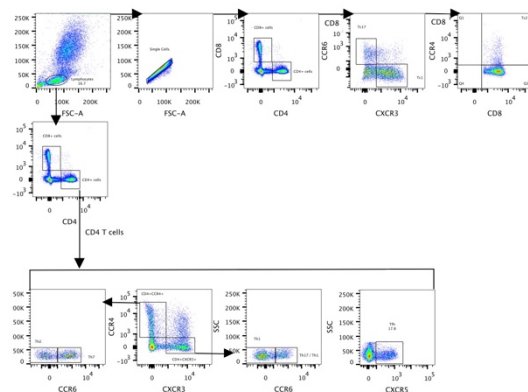
Supplementary materials



Supplementary Figure 1 Histopathology and clinical manifestation of psoriasis. (a) Histopathology of the Psoriasis Vulgaris. Main histologic findings included: (1) the epidermis shows thickening (acanthosis) with regular elongation of rete ridges (black arrow); (2) a chronic inflammatory infiltrate composed mainly of small T-lymphocytes (red arrow) were shown in superficial dermis; (3) hyperkeratosis with parakeratosis (blue arrow). Scale bar is 500 μm . (b-c) Clinical symptoms of psoriasis. Scaly, thickened patches (plaques) (red arrows) of skin were commonly seen.



Supplementary Figure2 Expression signatures of the marked subpopulations P1, P3 and P4 in Fig4A. Bar heights indicate the median expression for each marker within the subpopulation, estimated from cells sampled close to the locations of the subpopulation peaks. The horizontal line for each marker corresponds to its median expression level across all the cells in the dataset.



Supplementary Figure3 Analysis strategy for PBMC by flow cytometry

Supplementary Table 1 Staining panel

For CyTOF

Cat#	Antibodies	Clone	Mass Tag	Concentration
3089003B	CD45	HI30	89Y	1:100
3141014A	CD196 (CCR6)	11A9	141Pr	1:100
3142001B	CD19	HIB19	142Nd	1:100
3144007A	CD195 (CCR5)	NP-6G4	144Nd	1:100
3145001B	CD4	RPA-T4	145Nd	1:100
3146001B	CD8a	RPA-T8	146Nd	1:100
3148019B	CD278/ICOS	C398.4A	148Nd	1:100
3149001B	CD45RO	UCHL1	149Sm	1:100
ab219588	anti AKT1+2+3	Y89	150Nd	1:50
ab201664	Anti-JAK3	MM0784-36P7	151Eu	1:50
ab188409	CD161	HP-3G10	152Sm	1:50
ab225575	CD185 (CXCR5)	ERP8837	153Eu	1:100
ab207297	Anti-NFKB P65	E379	154Sm	1:50
3155009B	CD279 (PD-1)	EH12.2H7	155Gd	1:100
3156029B	CD184	12G5	156Gd	1:100
3158006A	CD194 (CCR4)	205410	158Gd	1:100
3159003A	CD197 (CCR7)	G043H7	159Tb	1:100
ab171829	anti-mTOR	53E11	160Gd	1:50
3161023B	CD80	2D10.4	161Dy	1:100
3163004B	CD183 (CXCR3)	G025H7	163Dy	1:100
3164018B	CD23	EBVCS-5	164Dy	1:100
103051	CD44	IM 7	165Ho	1:200
ab89896	CD252	MM0505-8S23	166Er	1:100
3167006B	CD27	L128	167Er	1:100
3168017B	CD127 (IL-7Ra)	A019D5	168Er	1:100
3169003B	CD25 (IL-2R)	2A3	169Tm	1:100

3170001B	CD3	UCHT1	170Er	1:100
ab215367	anti-STAT5 A+B	EPR16671-40	172Yb	1:50
ab218017	anti-ERK1+ERK2	EPR17526	173Yb	1:50
ab36607	foxp3	2A11G9	175Lu	1:50
ab171359	anti-STAT3	EPR787Y	176Yb	1:50

For flow cytometry validation

Cat#	Antibodies	Clone	Concentration	Chanel
562970	CD4	SK3	1:100	BV510
557945	CD8	RPA-T8	1:100	Alexa Fluor 700
562558	CXCR3	1C6/CXCR3	1:100	BV421
359420	CCR4	L291H4	1:100	PE/Dazzle 594
564479	CCR6	11A9	1:100	BB515
558113	CXCR5	RF8B2	1:100	Alexa 647
563663	OX40	ACT35	1:50	PE-Cy7
423106	Zombie	/	1:200	NIR
17-0149-42	CD14	61D3	1:100	APC
11-0037-42	CD3	OKT3	1:100	FITC

Supplementary Table 2 Demographics of healthy individuals and psoriasis in this study

	Healthy control (n=30)	PS (n=38)
Male (%)	18 (60.0%)	24 (63.2%)
Age (y) Mean $\pm$ SD	43.43 $\pm$ 2.736	46.13 $\pm$ 2.447
Duration of disease (Months)	/	3.31 $\pm$ 4.47

Information for patients with psoriasis vulgaris (n=18) for the CVN block experiment

Sample ID	Age/Gender	PASI	Duration of disease (Months)
7	30/F	16.3	0.5
13	52/F	0.1	0.5
15	46/F	2.1	1.0
18	70/M	5.2	4.0
23	38/M	4.2	1.0
24	78/F	1.8	2.0
25	47/M	5.6	0.5
26	63/M	21	1.0
27	61/M	14	13.0
28	54/F	5.4	1.0
29	39/M	0.8	1.5
30	18/M	46	1.0
31	19/M	16	2.5

32	32/M	9.6	2.5
34	33/M	18.6	2.5
35	36/M	11	3.0
36	33/M	3	1.0
37	34/M	32	5.0

Abbreviation: PASI, Psoriasis Area and Severity Index

Supplementary Table3 Primers of fosl2 and beta-actin

Fosl2	Forward 5'-AGAAATTCGGGTAGATATGCC-3'
	Reverse 5'-GGTATGGGTTGGACATGGAGG-3'
Beta-actin	Forward 5'-CATGTACGTTGCTATCCAGG-3'
	Reverse 5'-CTCCTTAATGTCACGCAGAT-3'