Supplementary Table 1. Patient Information for scRNA-seq			
Sample ID	**Sex**	**Age**	**State**
HA1	male	55	healthy
HA2	male	60	healthy
HA3	male	49	healthy
HP1	male	61	herpes zoster
HP2	male	66	herpes zoster
HP3	female	28	herpes zoster
RP1	female	61	recoevered from herpes zoster
RP2	male	66	recoevered from herpes zoster
RP3	female	58	recoevered from herpes zoster

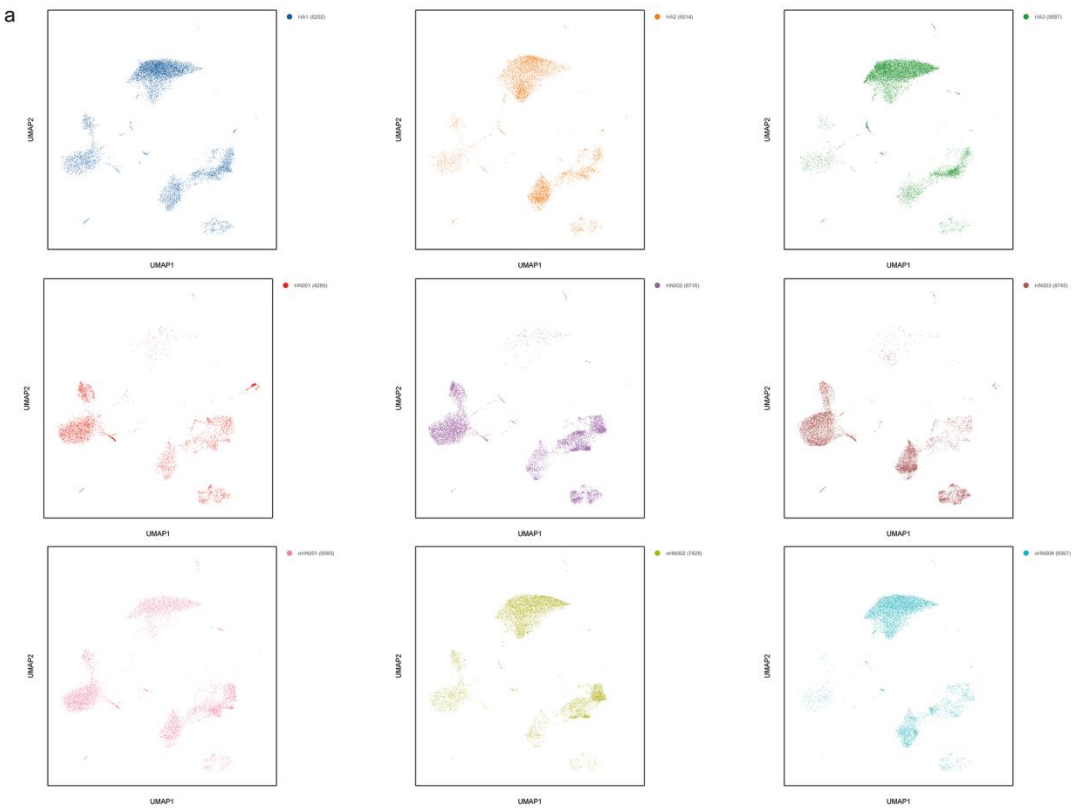
Supplementary Table 2. Details of antibodies

Antibody	Specificity	Clone	Vendor	Fluorochrome	Cat#	Usage
CD45RO	human	UCHL1	BD	APC-Cy7	304227	flow
CD33	human	P67.6	BioLegend	APC	366605	flow
CD56	human	HCD56	BioLegend	APC	318309	flow
KLRG1	human	SA231A2	ThermoFisher	PerCP-Cy5.5	367707	flow
CD25	human	M-A251	BioLegend	APC	356109	flow
CD138	human	DL101	BioLegend	APC	352307	flow
CD3	human	OKT3	BioLegend	FITC	317305	flow
CD8	human	SK1	BioLegend	BV510	344731	flow
CD4	human	RPA-T4	BioLegend	PerCP-Cy5.5	300529	flow
CD62L	human	DREG-56	BioLegend	PE	304805	flow
CD66b	human	6/40C	BioLegend	BV421	392915	flow
CD192	human	KO36C2	BioLegend	PE	357205	flow
CD11b	human	ICRF44	BioLegend	FITC	301329	flow
CD244	human	2-69	BioLegend	PE	393507	flow
CD122	human	TU27	BioLegend	PE-Cy7	339013	flow
CD14	human	63D3	BioLegend	PerCP-Cy5.5	367109	flow
CD196	human	G034E3	BioLegend	PE	353409	flow
CD16	human	EPR22409-124	ABCAM	AV488	AB270139	flow
CD27	human	323	EBOSCIENCE	FITC	11-0279-42	flow
CD19	human	6D5	ABCAM	APC	AB25484	flow

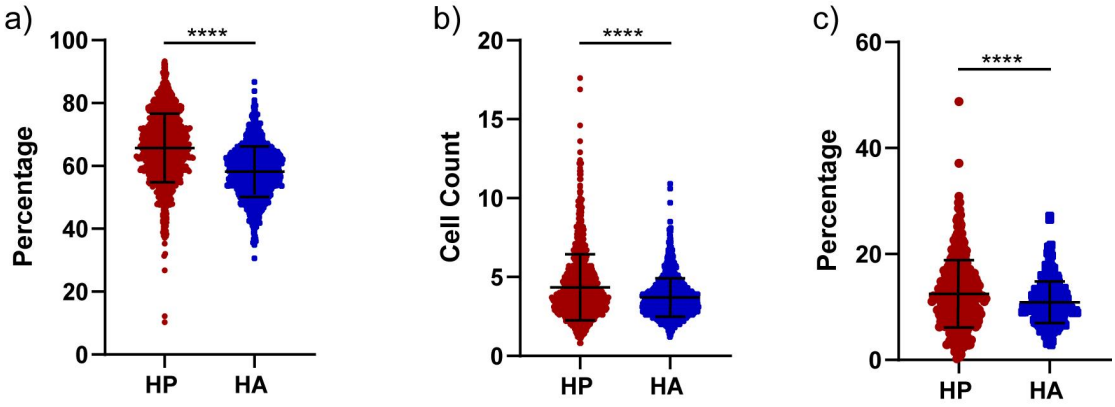
Supplementay Table 3. surface antibody panel						
Panel	**Antibody**	**Specificity**	**Clone**	**Vendor**	**Fluorochrome**	**Cat#**
Fig.5a	CD3	human	OKT3	BioLegend	FITC	317305
	CD8	human	SK1	BioLegend	BV510	344731
	CD4	human	RPA-T4	BioLegend	PerCP-Cy5.5	300529
Fig.5o	CD3	human	OKT3	BioLegend	FITC	317305
	CD8	human	SK1	BioLegend	BV510	344731
	KLRG1	human	SA231A2	ThermoFisher	PerCP-Cy5.5	367707
	CD122	human	TU27	BioLegend	PE-Cy7	339013
	CD45RO	human	UCHL1	BD	APC-Cy7	304227
	CD62L	human	DREG-56	BioLegend	PE	304805
Fig.6i	CD62L	human	DREG-56	BioLegend	PE	304805
	CD66b	human	6/40C	BioLegend	BV421	392915
	CD11b	human	ICRF44	BioLegend	FITC	301329
	CD14	human	63D3	BioLegend	PerCP-Cy5.5	367109
Fig.7j	CD14	human	63D3	BioLegend	PerCP-Cy5.5	367109
	CD16	human	EPR22409-124	ABCAM	AV488	AB270139
Fig.8i	CD19	human	6D5	ABCAM	APC	AB25484

Supplementary Table 4. Patient Information for flow cytometry analysis		
Sample ID	**Sex**	**State**
HA4	male	healthy
HA5	male	healthy
HA6	male	healthy
HA7	male	healthy
HA8	male	healthy
HA9	male	healthy
HA10	male	healthy
HA11	male	healthy
HA12	male	healthy
HA13	male	healthy
HA14	male	healthy
HA15	male	healthy
HA16	male	healthy
HA17	male	healthy
HA18	male	healthy
HA19	male	healthy
HA20	male	healthy
HA21	male	healthy
HA22	male	healthy
HA23	male	healthy
HP4	male	herpes zoster
HP5	male	herpes zoster
HP6	male	herpes zoster
HP7	male	herpes zoster
HP8	male	herpes zoster
HP9	male	herpes zoster
HP10	male	herpes zoster
HP11	male	herpes zoster
HP12	male	herpes zoster
HP13	male	herpes zoster
HP14	male	herpes zoster
HP15	male	herpes zoster
HP16	male	herpes zoster
HP17	male	herpes zoster
HP18	male	herpes zoster
HP19	male	herpes zoster
HP20	male	herpes zoster
HP21	male	herpes zoster
HP22	male	herpes zoster

Supplementary Table 5. Abbreviations and acronyms	
HZ	Herpes zoster
VZV	varicella-zoster virus
PHN	postherpetic neuralgia
PBMCs	peripheral blood mononuclear cells
HSV-1	herpes simplex virus 1
HSV-2	herpes simplex virus 2
HA	healthy control
HP	patient with herpes zoster
RP	patient recovered from herpes zoster
scRNA-seq	single-cell RNA sequencing
Teff	effector T cells
Tem	effector memory T cells
OCR	open chromatin regions
DAR	differently accessible regions

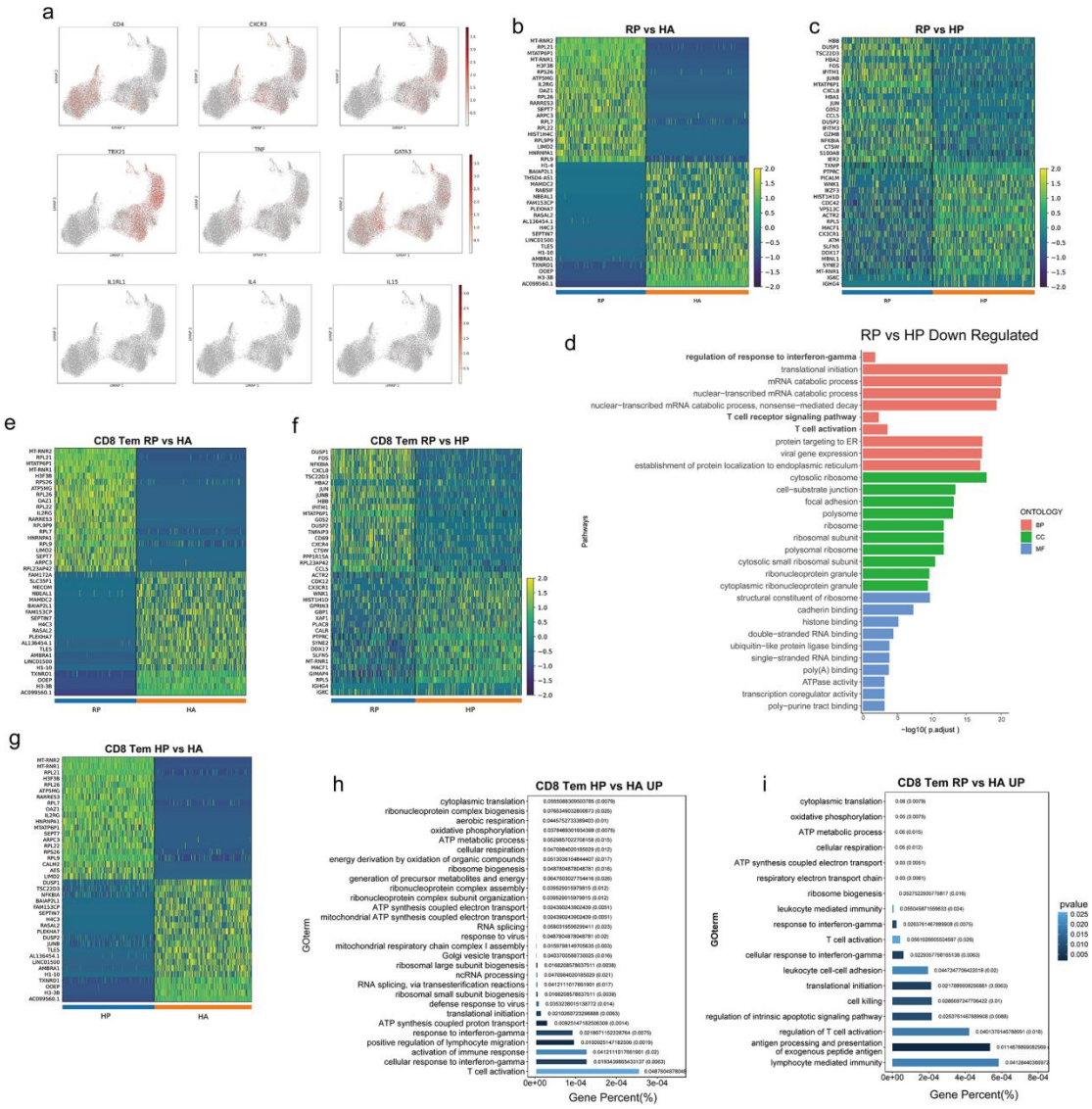


Supplementary Figure. 1 the UMAP plot of each individual involved in the study.
(a) UMAP plot showing the the clustering distribution of each sample.



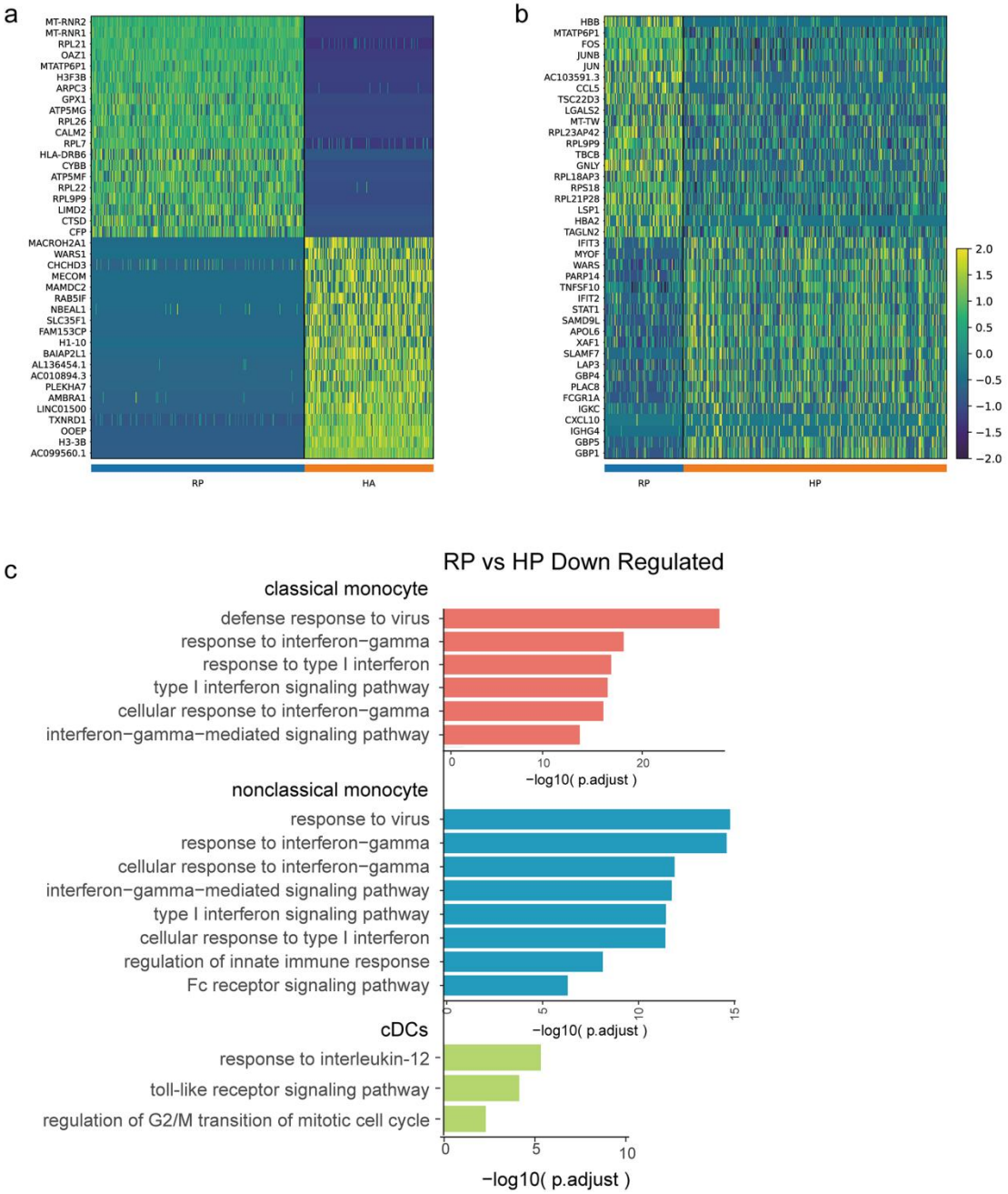
Supplementary Figure. 2 clinical analysis from healthy controls and herpes zoster patients, related to fig 2.

(a-b) Blood routine analysis of the numbers and frequencies of neutrophils from healthy controls and herpes zoster patients. (c) Blood routine analysis of the frequencies of B cells from healthy controls and herpes zoster patients. Unpaired t-test were used and the data represent the means ± SEM. ***P < 0. 001, ****P < 0. 0001.



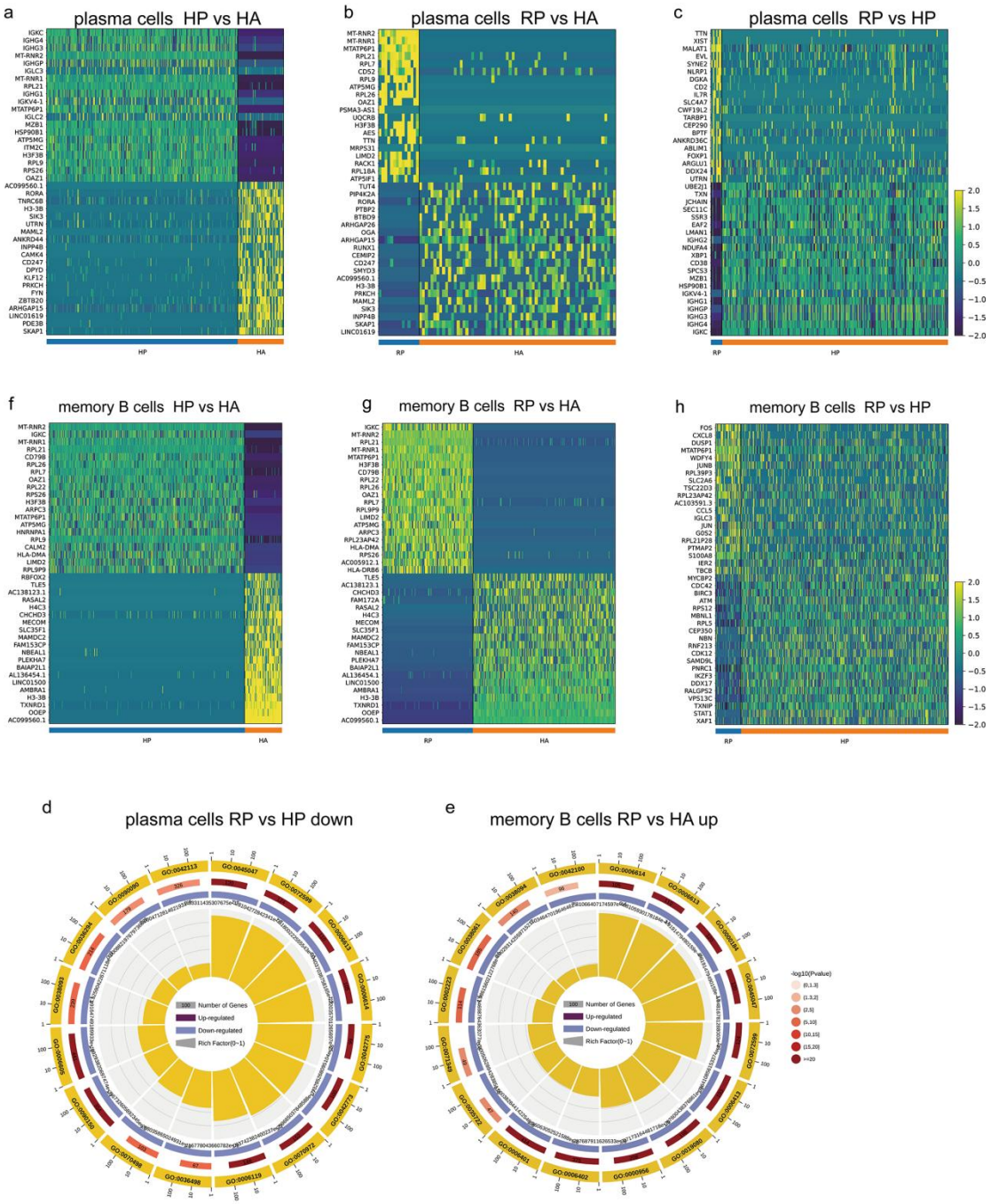
Supplementary Figure. 3 Analysis of T subsets landscape in HA, HP and RP group.

(a) The UAMP plot showing subtype specific marker genes of CD4+ T cells. (b)The heatmap shows the DEGs of CD8+ Teff cells between the RP group and HA group. (c)The heatmap shows the DEGs of CD8+ Teff cells between the RP group and HPgroup. (d) GO enrichment analysis for the DEGs of CD8 teff cells down-regulated in RP group than HP group. P value was derived by a hypergeometric test. (e)The heatmap shows the DEGs of CD8+ Tem cells between the RP group and HA group. (f)The heatmap shows the DEGs of CD8+ Tem cells between the RP group and HP group. (g) The heatmap shows the DEGs of CD8+ Tem cells between the HP group and HA group. (h) GO BP enrichment analysis for the DEGs of the CD8 Tem cell up-regulated in HP group than HA group. P value was derived by a hypergeometric test. (i) GO BP enrichment analysis for the DEGs of the CD8 Tem cell up-regulated in RP group than HA group. P value was derived by a hypergeometric test.



Supplementary figure. 4 the functional enrichment analysis of MPs between RP group than hp group,related to fig 7.

(a) The heatmap shows the DEGs of MPs cells between the HAs, and herpes zoster patients (RP) patients. (b) The heatmap shows the DEGs of MPs cells between the HPs, and herpes zoster patients (RP) patients. (c) GO BP enrichment analysis for the DEGs of three MPs subpopulations down-regulated in RP group than HP group. P value was derived by a hypergeometric test.



Supplementary Figure. 5 Analysis of B subsets landscape in HA, HP and RP group.

(a) The heatmap shows the DEGs of plasma cells between the HP group and HA group. (b) The heatmap shows the DEGs of CD8+ Tem cells between the RP group and HAgroup. (c)The heatmap shows the DEGs of CD8+ Tem cells between the RP group and HP group. (d) GO BP enrichment analysis for the DEGs of the plasma cell down-regulated in RP group than HP group. P value was derived by a hypergeometric test. (e) GO BP enrichment analysis for the DEGs of the memory B cell up-regulated in RP group than HA group. P value was derived by a hypergeometric test. (f) The heatmap shows the DEGs of memory B cells between the HP group and HA group. (g) The heatmap shows the DEGs of memory B cells between the RP group and HA

group. (h) The heatmap shows the DEGs of memory B cells between the RP group and HP group.