Figure S1 Workflow chart of this study. BRCA, breast cancer. CXCR, C-X-C motif chemokine receptor; LASSO, Least Absolute Shrinkage and Selection Operator; DEG, Differential Expressed Gene.
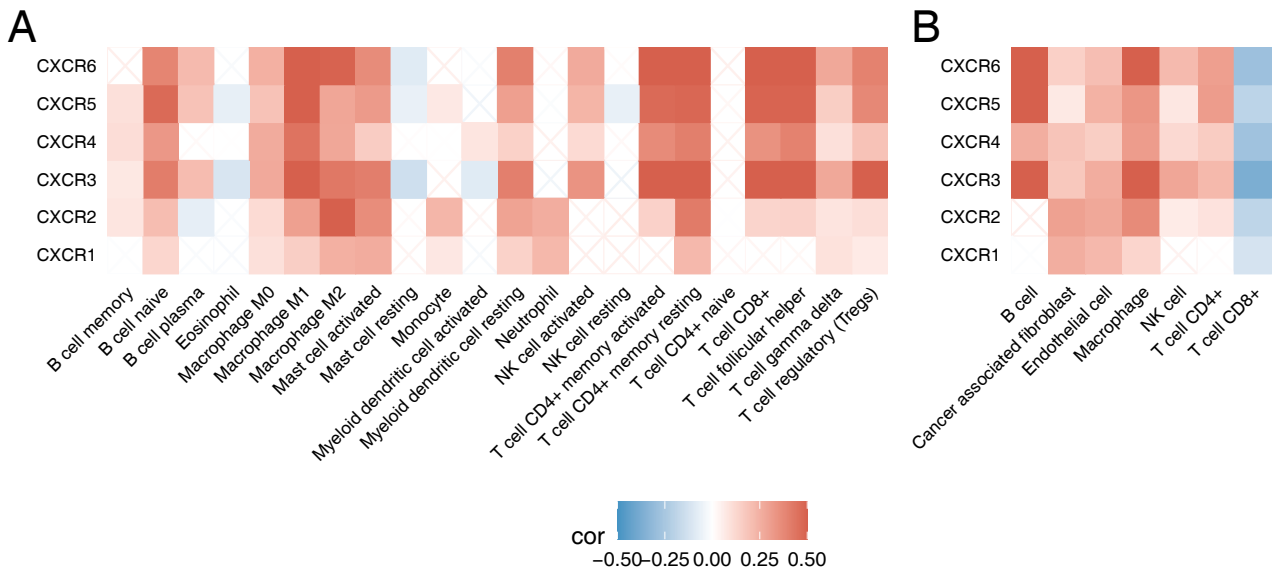

Figure S2 (A) Correlation between CXCRs and immune infiltrating cells via CIBERSORT algorithm. (B) Correlation between CXCRs and immune infiltrating cells via EPIC algorithm. CIBERSORT, Cell-type Identification by Estimating Relative Subsets of RNA Transcripts; EPIC, Estimating the Proportion of Immune and Cancer cells.
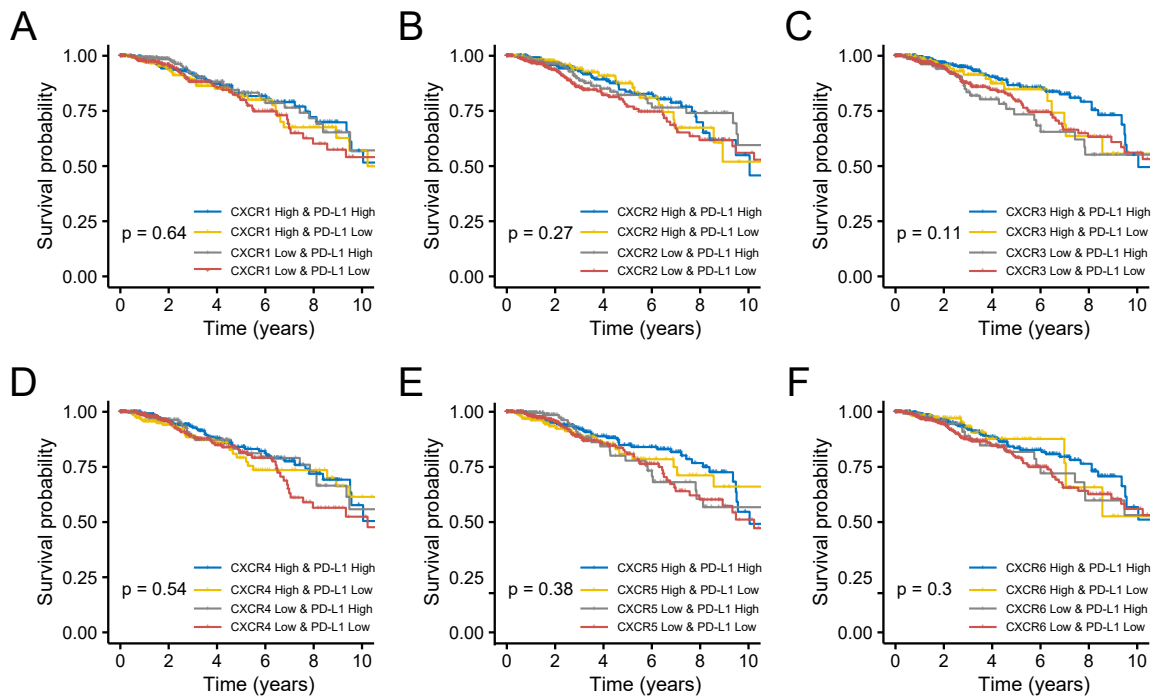
Figure S3 Survival differences of patients with breast cancer based on CXCR family genes combined with PD-L1 expression. PD-L1, programmed death ligand 1.
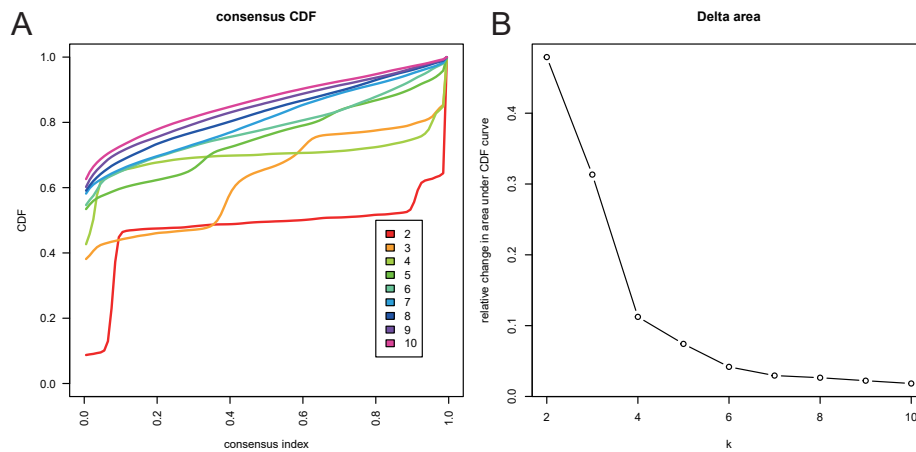

Figure S4 (A) Consensus clustering cumulative distribution function (CDF) for k=2 to 10. (B) The relative variation in the area under the Consensus clustering CDF curve for k=2 to 10.

Table S1 Clinical characteristics of patients with BRCA

Characteristic	Patient frequency
Total	1080
Gender	
Male	8 (0.7%)
Female	795 (73.6%)
Age, years	
≤65	584 (54.1%)
>65	219 (20.3%)
Tumor stage	
I	123 (11.4%)
II	349 (32.3%)
III	123 (11.4%)
IV	4 (0.4%)
Nodal status	
(-)	375 (34.8%)
(+)	401 (37.1%)
ER status	
(-)	178 (16.5%)
(+)	588 (54.4%)
PR status	
(-)	249 (23.1%)
(+)	514 (47.6%)
Her-2 status	
(-)	640 (59.3%)
(+)	111 (10.3%)

Note: Do not contain complete information for some participants due to missing data. BRCA, breast cancer.

Table S2 Differences in the distribution of molecular subtypes of BRCA between the two subgroups

TCGA Subtype	Subtype A	Subtype B
BRCA.Basal	79	93
BRCA.Her2	29	44
BRCA.LumA	295	213
BRCA.LumB	109	82
BRCA.Normal	74	64
		p = 0.005
Immune Subtype		
C1	258	111
C2	120	270
C3	99	92
C3	88	3
C6	20	20
		p = 0.0005
Stage		
Stage I/II	437	365
Stage III	127	123
Stage IV	16	4
		p = 0.035

Table S3 Univariate and multivariate analysis of clinical factors

	Univariate analysis		Multivariate analysis	
	HR (95% CI)	P value	HR (95% CI)	P value
Signature Score	3.62 (1.52-8.65)	0.004	4.75 (1.90-11.9)	<0.001
Age	1.03 (1.02-1.05)	<0.001	1.03 (1.01-1.05)	<0.001
Stage				
Stage III VS Stage I/II	2.56 (1.55-4.22)	<0.001	3.10 (1.86-5.16)	<0.001
Stage IV VS Stage I/II	11.5 (5.52-23.9)	<0.001	10.2 (4.85-21.5)	<0.001