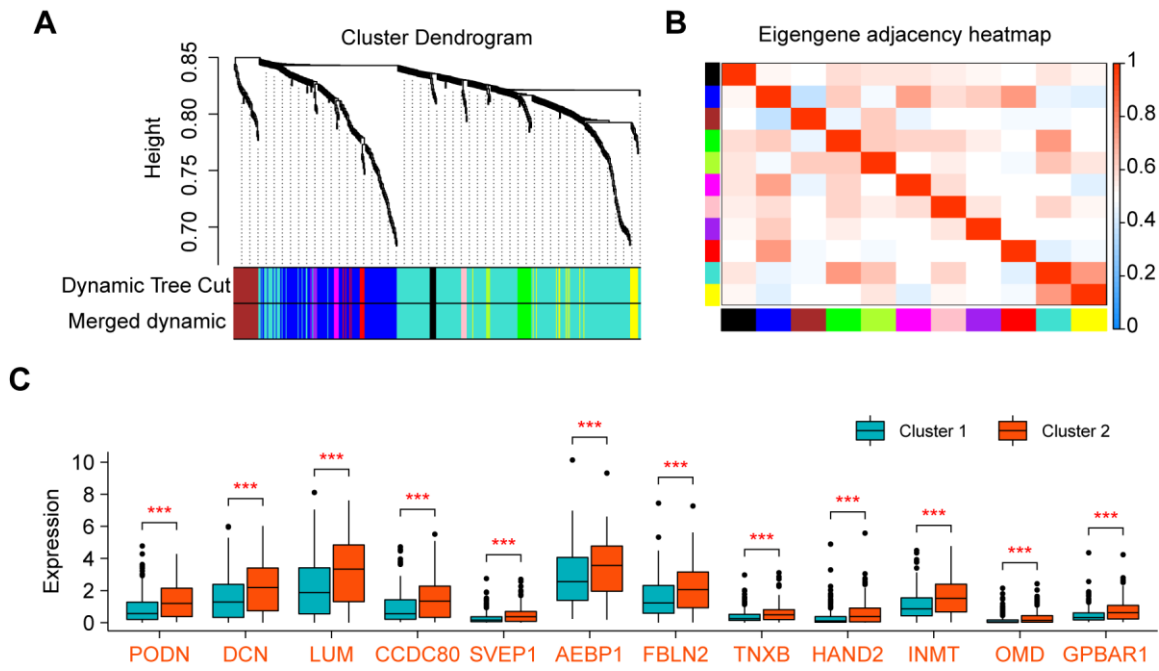
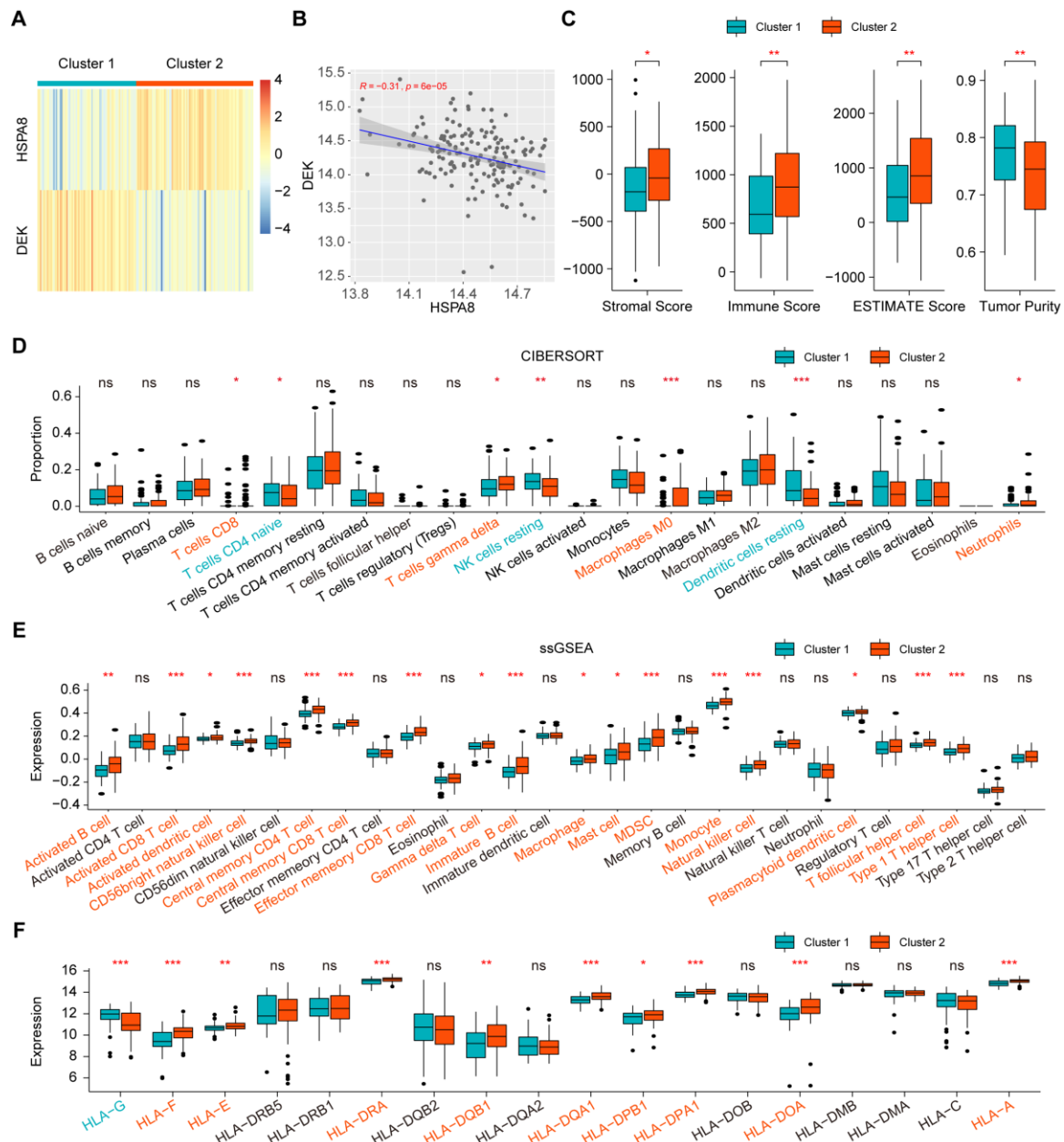


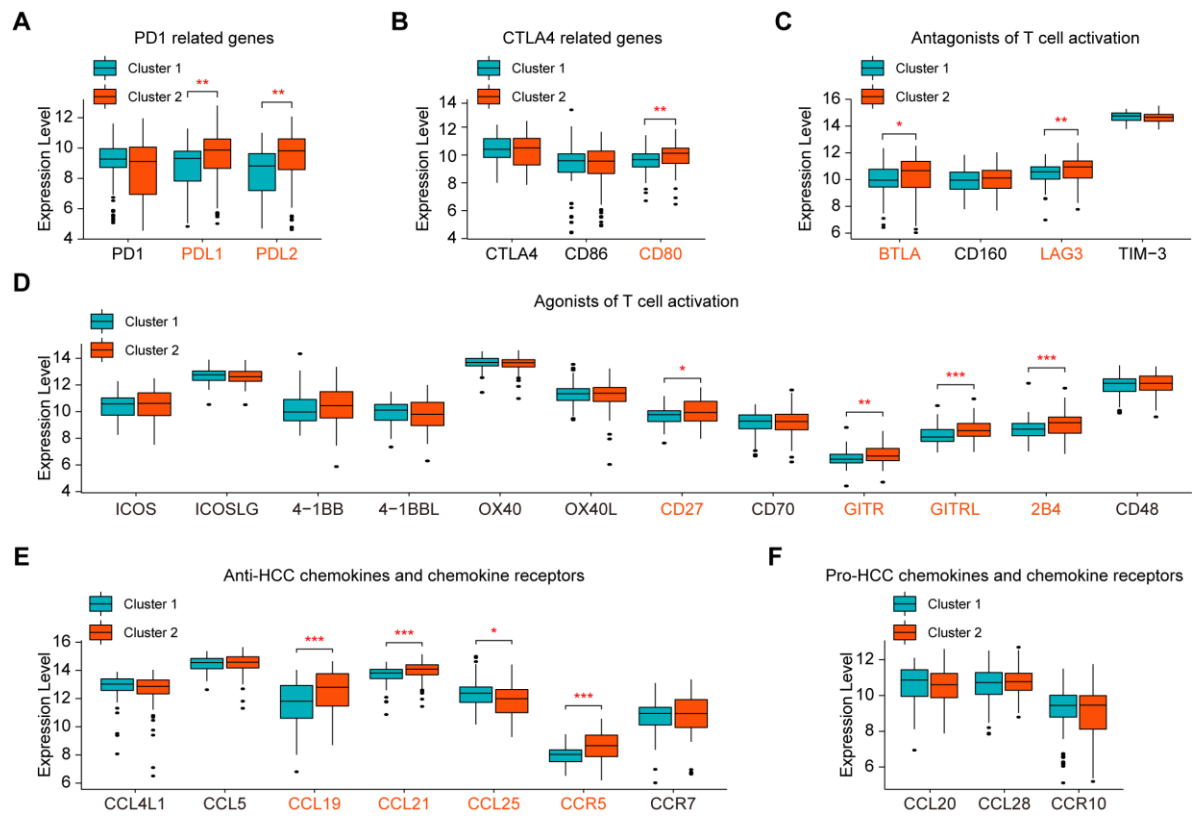
**Supplementary Figure S1.** Comparison of gene mutation profiles between the two clusters. Mutational landscape of Cluster 1 (**A**) and Cluster 2 (**B**). (**C**) Comparison of TMB between the two clusters. ns, no significance.



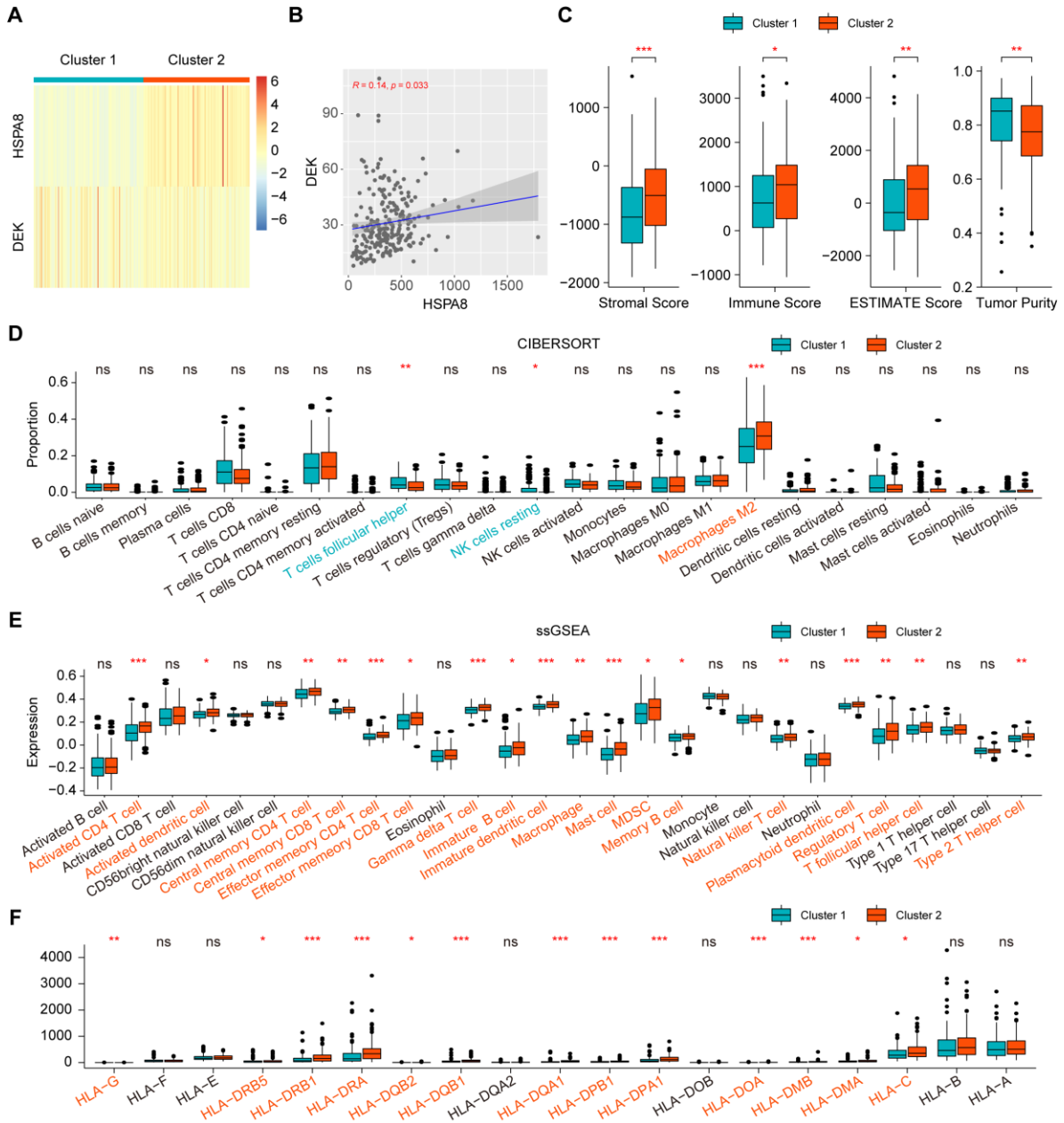
**Supplementary Figure S2.** Screening of hub genes related to immune infiltration by MGCNA. **(A)** Gene dendrogram and module colors. **(B)** Eigengene adjacency heatmap among the modules. **(C)** Comparison of the expression of the 12 hub genes between the two clusters.



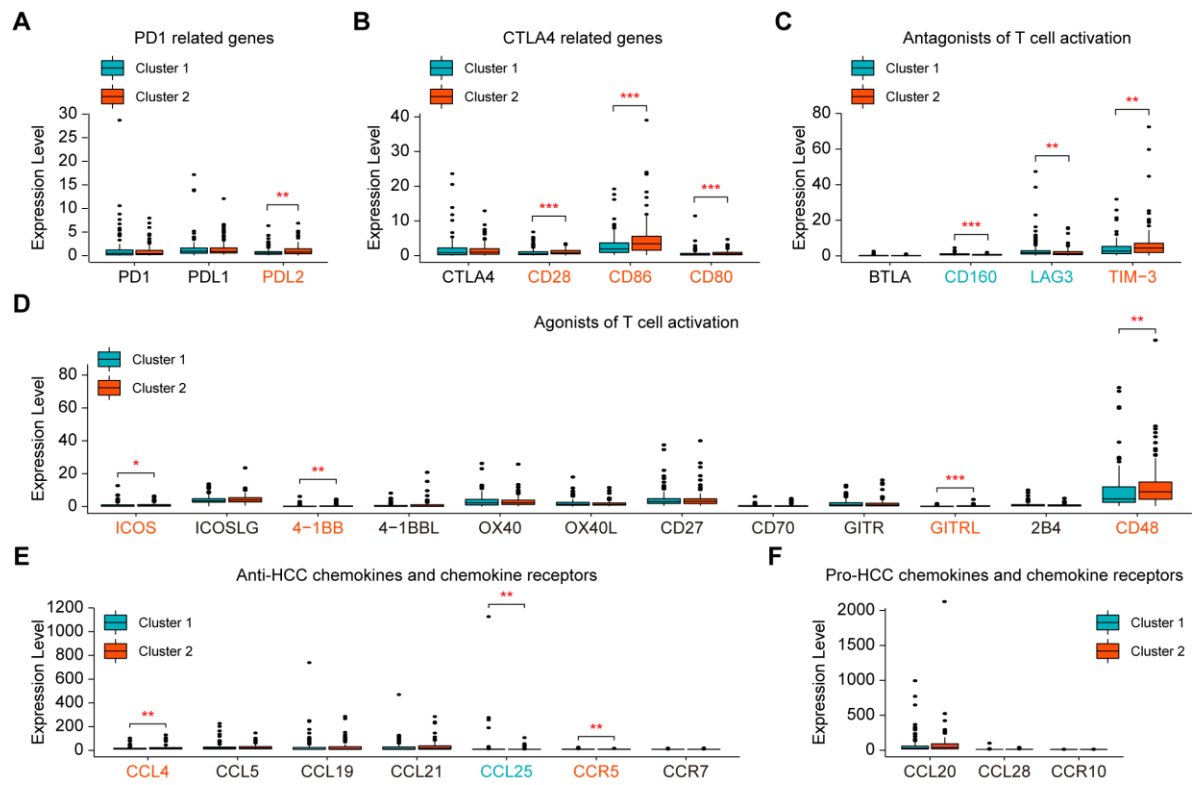
**Supplementary Figure S3.** Validation of immune infiltration of the two clusters by GSE19977. **(A)** GSE19977 patients are divided into two clusters according to *HSPA8* and *DEK*. **(B)** Association between the expression of *HSPA8* and *DEK*. **(C)** Comparison of the four indices of ESTIMATE. **(D)** Comparison of the proportion of immune cells by CIBERSORT. **(E)** Comparison of the expression of immune cells by ssGSEA. **(F)** Comparison of the expression of MHCs. ns, no significance, \* $P < 0.05$ , \*\* $P < 0.01$ , \*\*\* $P < 0.001$ .



**Supplementary Figure S4.** Validation of sensitivity to immunotherapy of the two clusters by GSE19977. (A-D) Comparison of the expression of immunomodulatory genes. (E, F) Comparison of the expression of known chemokines and chemokine receptors that regulate the progression of HCC. \*P < 0.05, \*\*P < 0.01, \*\*\*P < 0.001.



**Supplementary Figure S5.** Validation of immune infiltration of the two clusters by ICGC-LIRI JP. **(A)** ICGC-LIRI JP patients are divided into two clusters according to *HSPA8* and *DEK*. **(B)** Association between the expression of *HSPA8* and *DEK*. **(C)** Comparison of the four indices of ESTIMATE. **(D)** Comparison of the proportion of immune cells by CIBERSORT. **(E)** Comparison of the expression of immune cells by ssGSEA. **(F)** Comparison of the expression of MHCs. ns, no significance, \*P < 0.05, \*\*P < 0.01, \*\*\*P < 0.001.



**Supplementary Figure S6.** Validation of immune infiltration of the two clusters by ICGC-LIRI JP. **(A-D)** Comparison of the expression of immunomodulatory genes. **(E, F)** Comparison of the expression of known chemokines and chemokine receptors that regulate the progression of HCC. \*P < 0.05, \*\*P < 0.01, \*\*\*P < 0.001.