

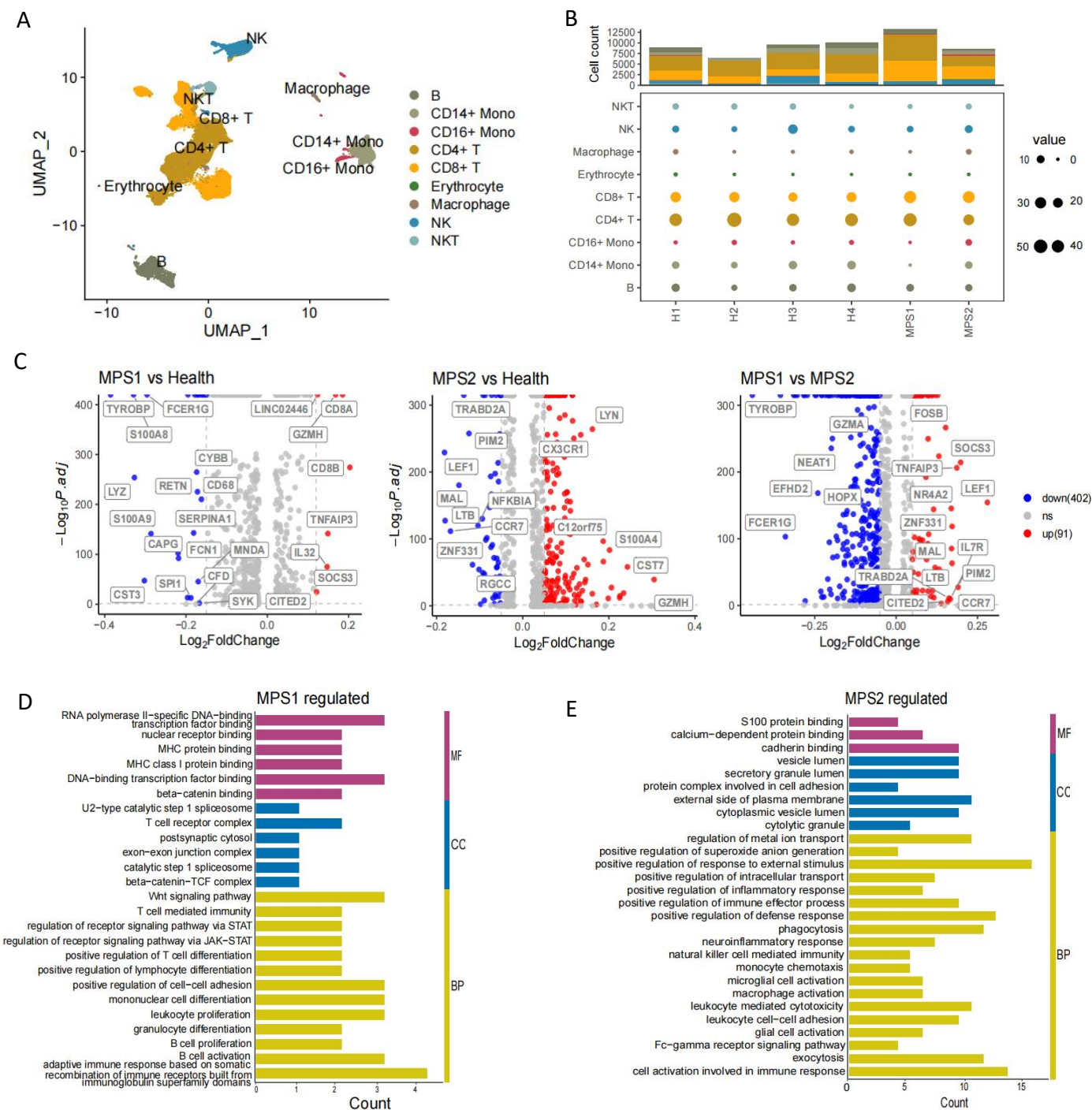


Figure S1. Single-cell transcriptional profile PBMC of MPS-II patients and health control. (A) UMPA plot of all integrated data (normal pbmc, pbmc sampled after first stage treatment and second stage treatment), colored by cell type. (B) Barplot and dotplot of the distribution of cell types in each sample. (C) Volcano plot of DEGs between health group, MPS II (a), and MPS II (b). (D)&(E) Barplot of GO terms in which genes upregulated in MPS II (a)(D) and MPS II (b) (E).

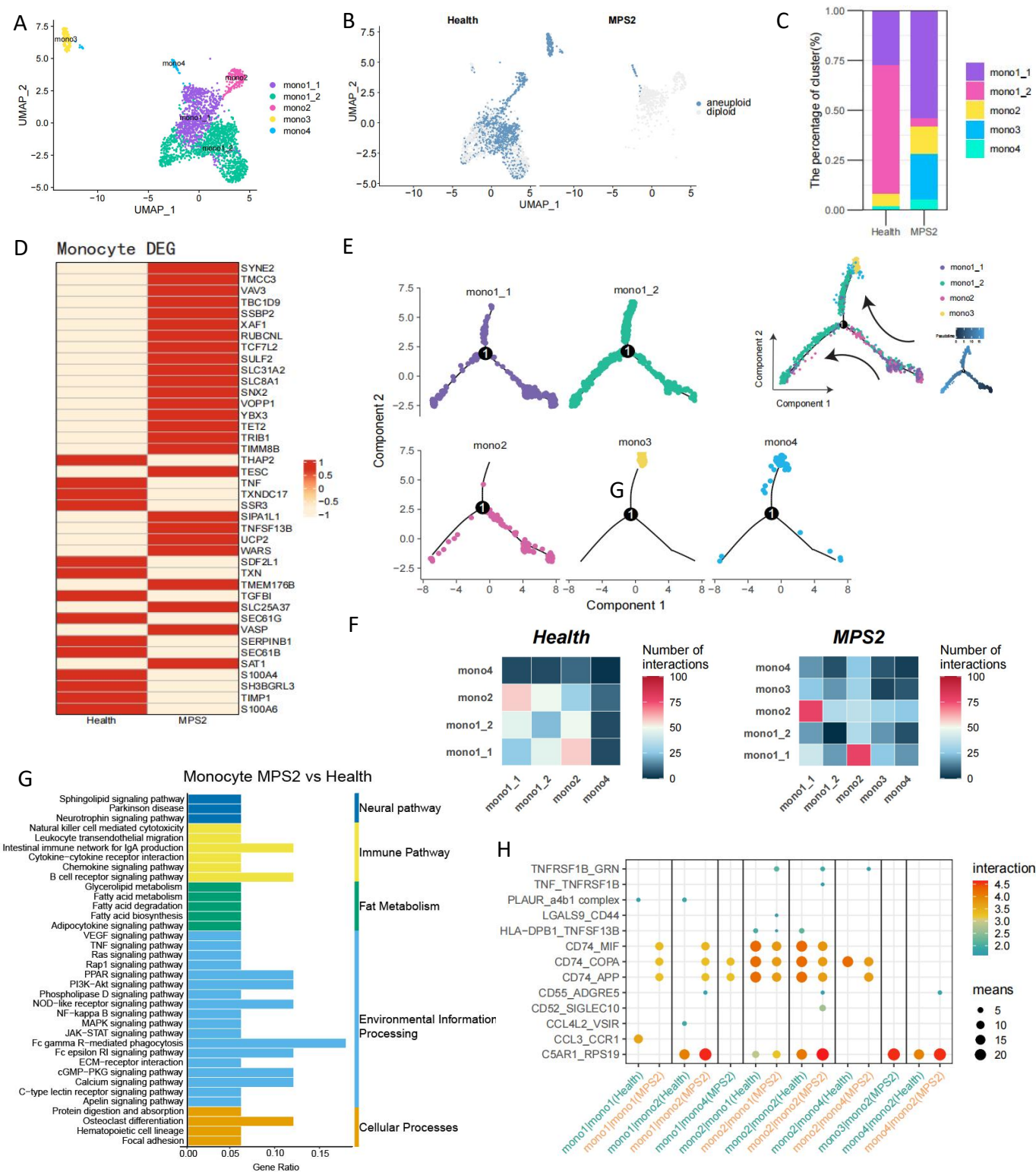


Figure S2. Single-cell transcriptional profile of monocyte. (A) UMAP plot of monocyte subtypes. (B) UMAP plot of the CNAs of monocyte. (C) Histogram illustrating cellular percentages of monocyte subtypes in each group. (D) Heatmap showing DEGs of monocyte between different groups. (E) UMAP plot illustrating the trajecoty of monocyte subtypes. (F) Number of cell-cell interactions between monocyte subtypes in each group. (G) Barplot of KEGG [28] terms of monocyte, colors indicated different biological process. (H) Dot plot of the predicted interactions pairs between monocyte subtypes. Interaction intensity was indicated by the color.

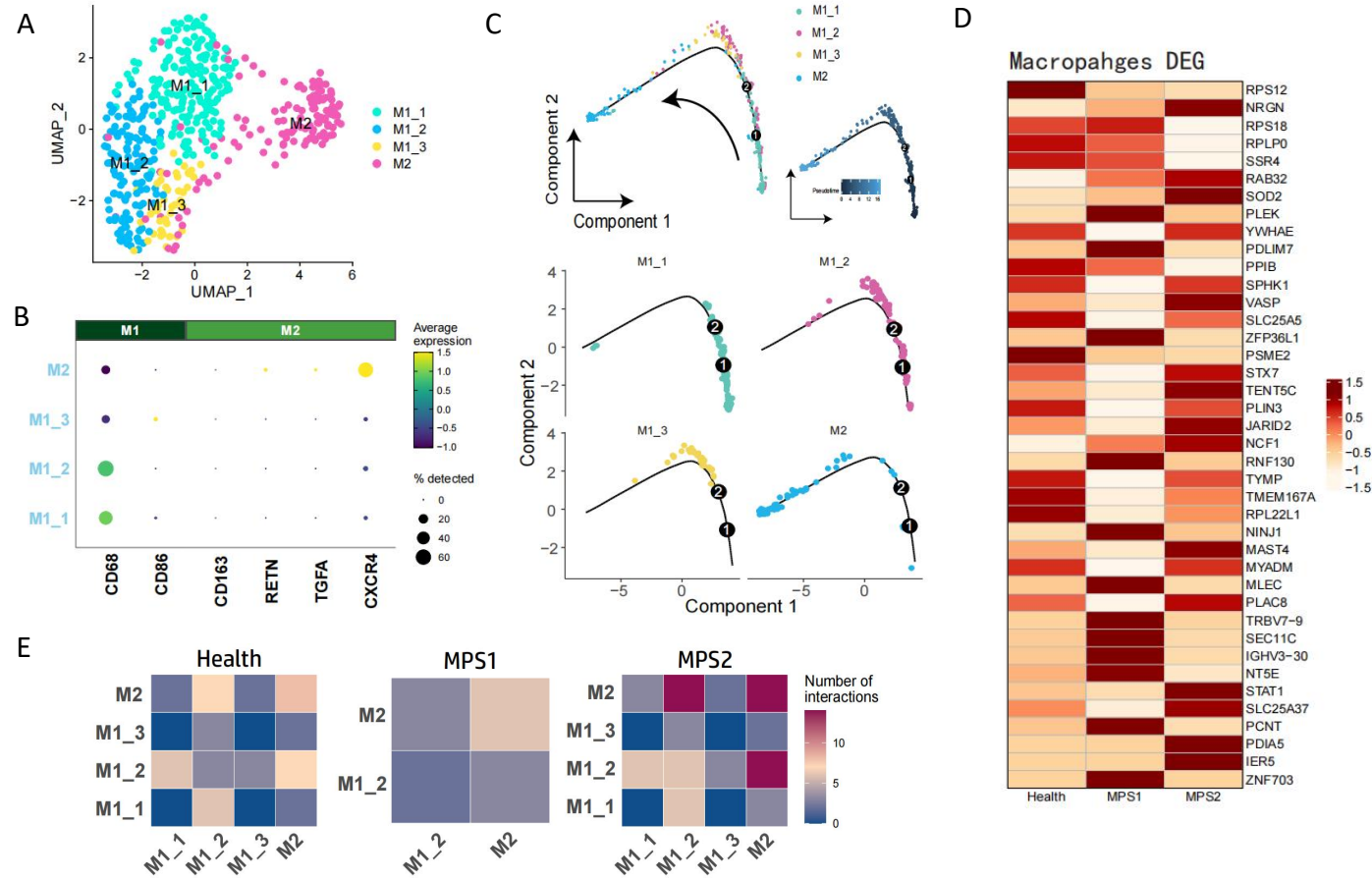


Figure S3. Single-cell transcriptional profile of macrophage. (A) UMAP plot of macrophage subtypes. (B) Dotplot showing known marker genes of macrophage subtypes. (C) UMAP plot illustrating the pseudotime trajectory of macrophage and its subtypes. (D) Heatmap showing top 10 differential expressed genes of macrophage in each group. (E) Number of cellular interactions between macrophage subtypes in each group.

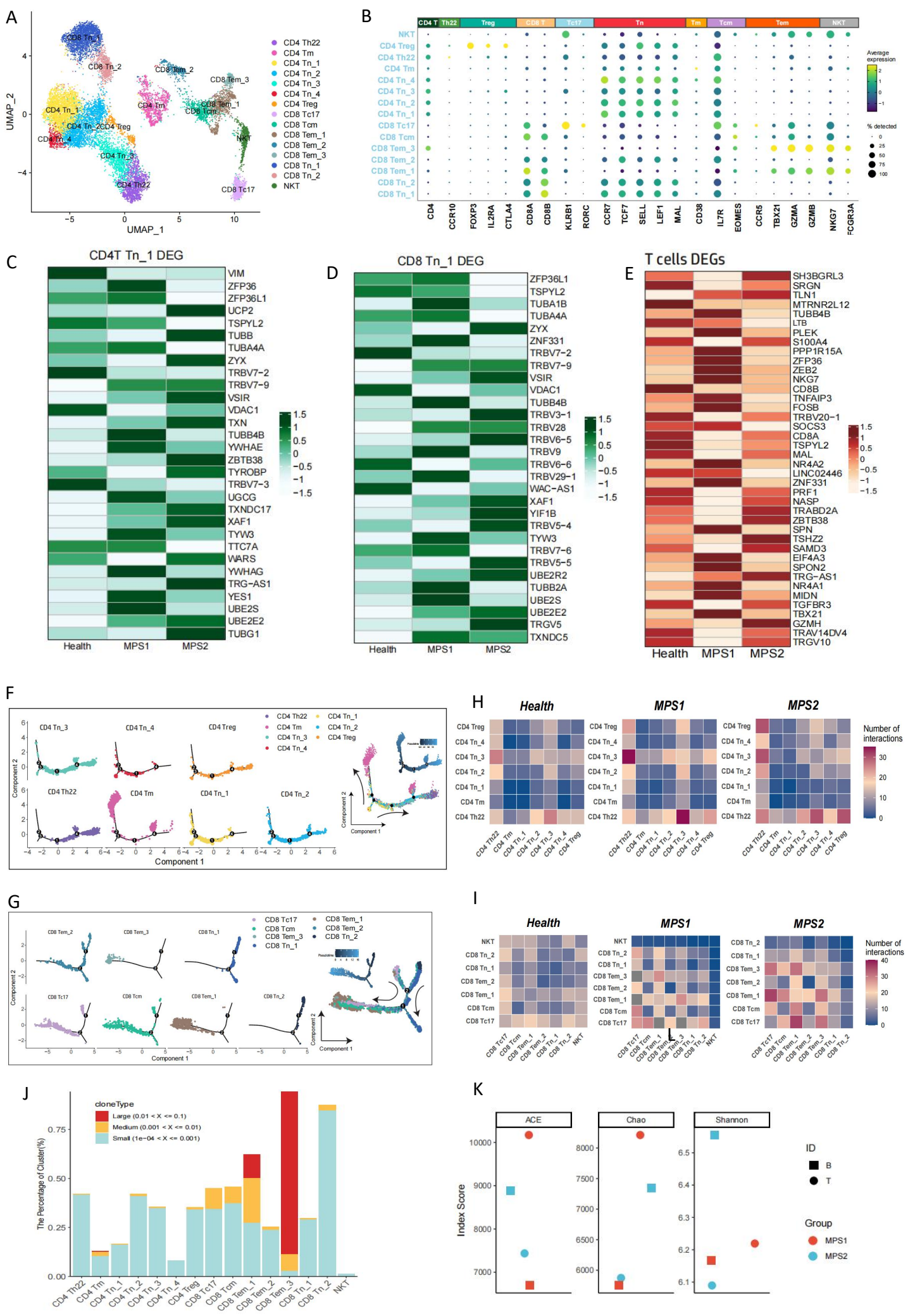


Figure S4. Single-cell transcriptional profile of T cells. (A) UMAP plot of T cell subtypes splited by group. (B) Dotplot showing marker genes of T cell subtypes. (C)-(E) Heatmap of top 10 DEGs in each group between CD4+ T cells (C), CD8+ T cells (D), and all T cells (E). (F-G). Pesudotime trajectory of CD4+T cells (F) and CD8+T cells (G). (H-I). Number of T cell subtypes cell-cell interactions in each group between CD4+ T cells (H) and CD8+ T cells (I). (J) Barplot of TCD clonotypes in each T cell subtypes. (K) Diversity index of TCR and BCR in MPS II (a) and MPS II (b).

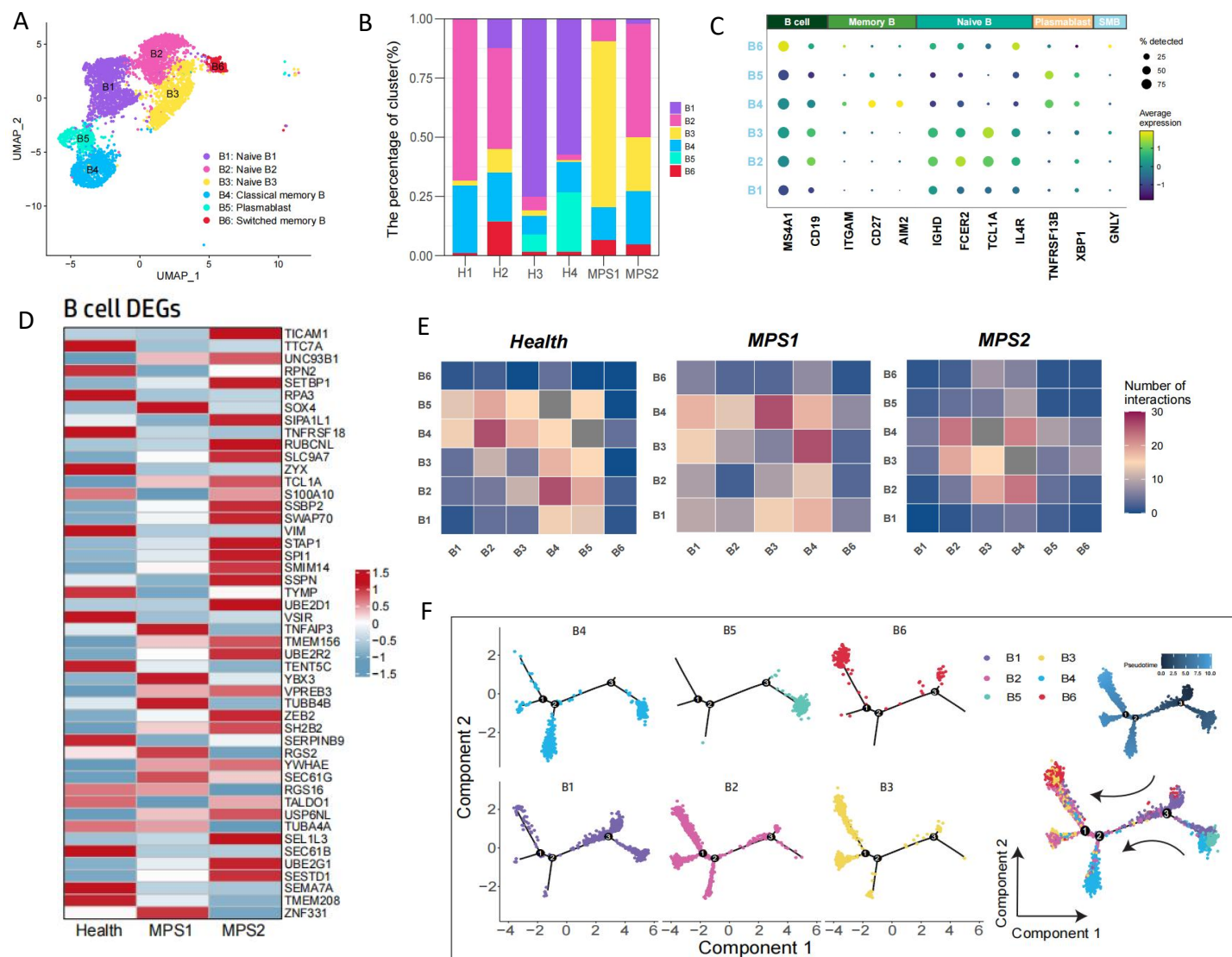


Figure S5. Single-cell transcriptional profile of B cells. (A) UMAP plot of B cell subtypes. (B) Barplot of the distribution of B cell subtypes in each sample. (C) Dotplot showing marker genes of B cell subtypes. (D) Heatmap showing top 10 differential expressed genes of B cell in each group. (E) Number of cellular interactions between B cell in each group. (F) Pseudotime trajectory of B cell subtypes.