

**SUPPLEMENTARY TABLE****Supplementary Table 1. Marker gene list.**

| Cell type               | Marker genes                             |
|-------------------------|--|
| B cell                  | CD19, MS4A1, CD79A, CD79B, SPIB          |
| Cytotoxic T cell        | CD3D, CD3G, CD8A, CD8B                   |
| Dendritic cell          | XCR1, CLEC9A, THBD, CD1C, CD1E, FCER1A   |
| Endothelial cell        | CDH5, PECAM1, VWF                        |
| Epithelial cell         | EPCAM, CDH1                              |
| Fibroblast              | LUM, DCN, COL1A2, COL1A1                 |
| Helper T cell           | CD3D, CD3G, CD4, TBX21, IFNG, IL4, CXCR5 |
| M1 macrophage           | CD68, IL1B, IL6, TNF                     |
| M2 macrophage           | MRC1, CD163, TGFB1, IL10, FN1            |
| MAST                    | TPSAB1, TPSB2, CPA3                      |
| Memory T cell           | PTPRC, CCR7, SELL                        |
| Mesenchymal progenitors | FDGFR4, LGR5                             |
| Monocyte                | CD14, FCN1, FCGR3A, VCAN                 |
| NK cell                 | KLRD1, NKG7, KLRC1, FCGR3A, CD3D-, CD3G- |
| Pericyte                | RGS5, ACTA2, MCAM, PDGFRB, NOTCH3        |
| Plasma cell             | CD79A, JCHAIN, MZB1, IGHG1               |
| Regulatory T cell       | FOXP3, IL2RA, CTLA4, IKZF2, CD25         |