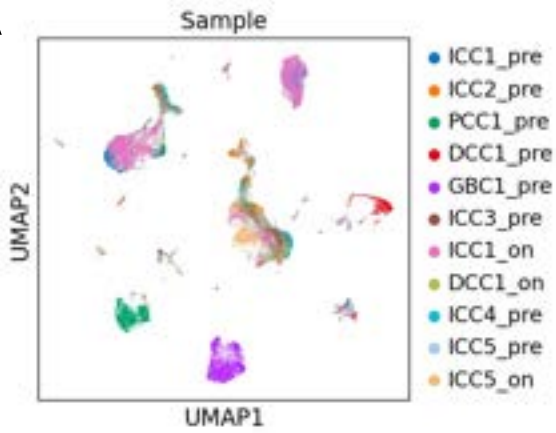
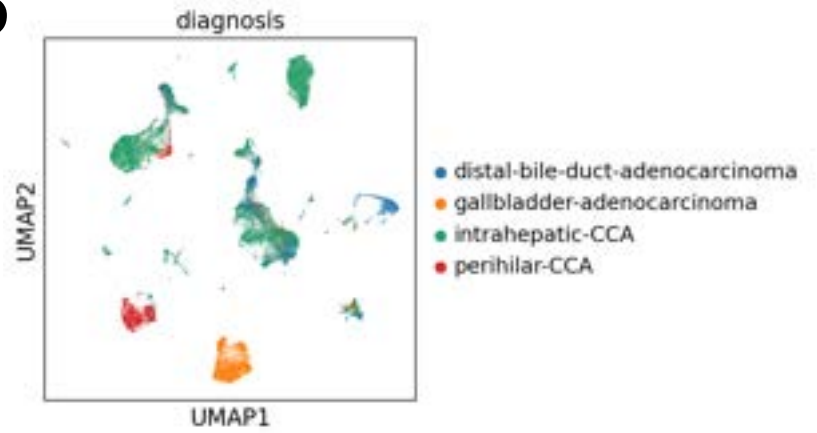
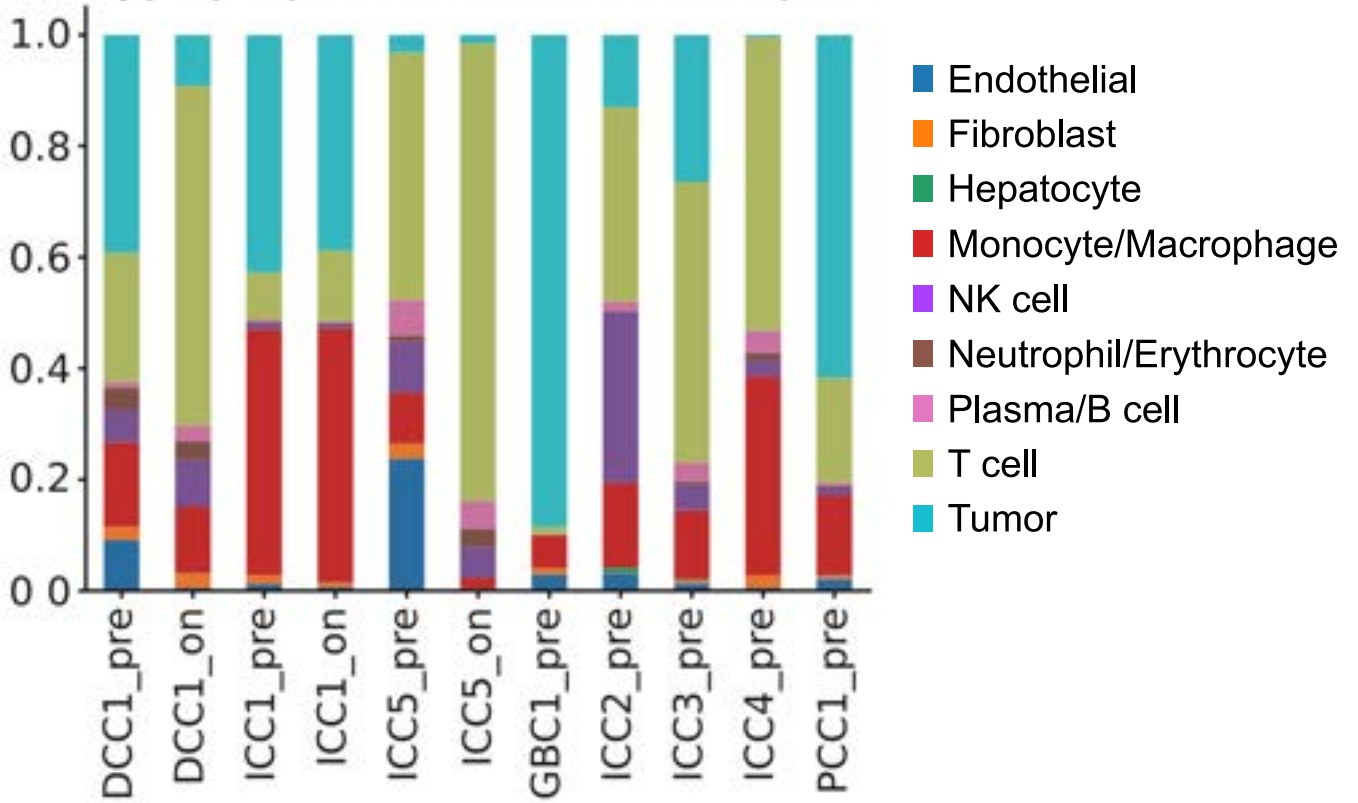


Figure S1

A**B****C**

Cell type proportions across all samples



A

Cluster	DKK1-	DKK1+	% positive
Tumor	18,299	811	4%
T cell	12,952	9	< 0.1%
Mono/Mac	11,827	50	0.4%
NK cell	2,056	1	< 0.1%
Endothelial	1,460	1	< 0.1%
Plasma/B	729	0	< 0.1%
Fibroblast	616	10	1.6%
Neutrophil/erythrocyte	514	1	0.2%
Hepatocyte	44	0	< 0.1%

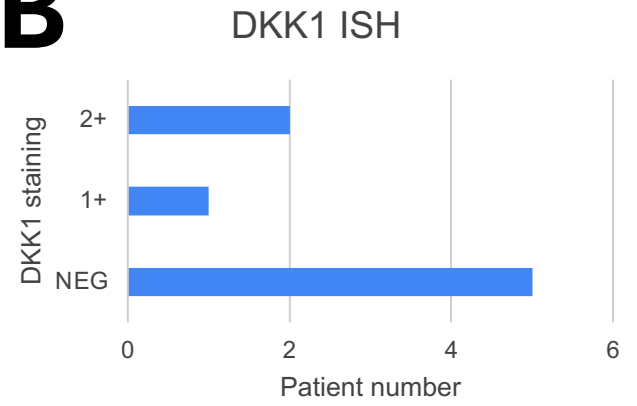
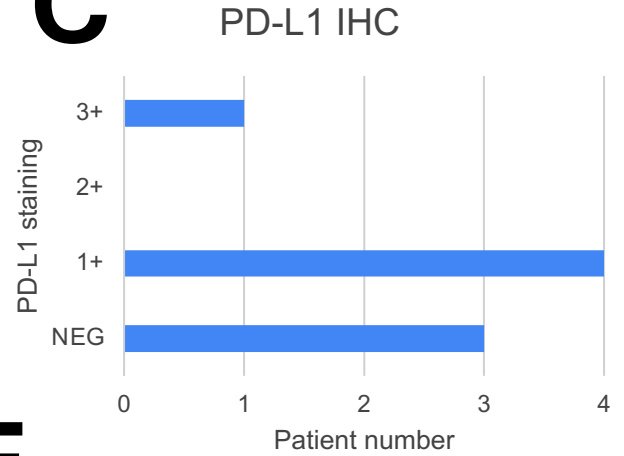
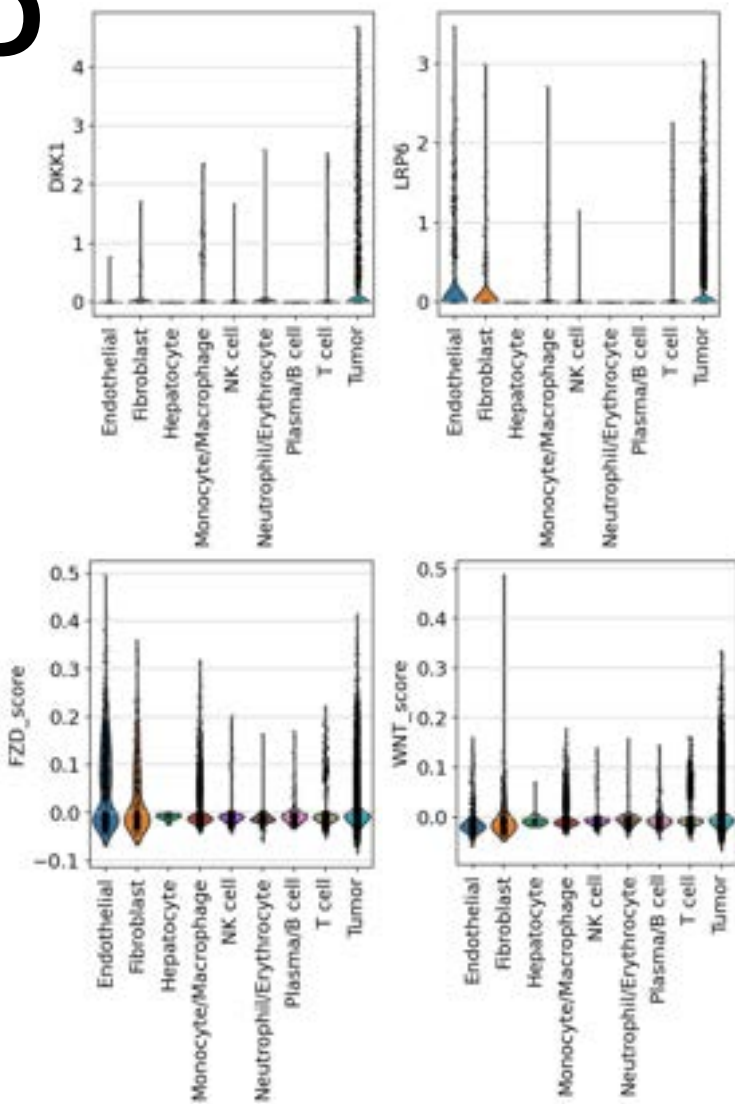
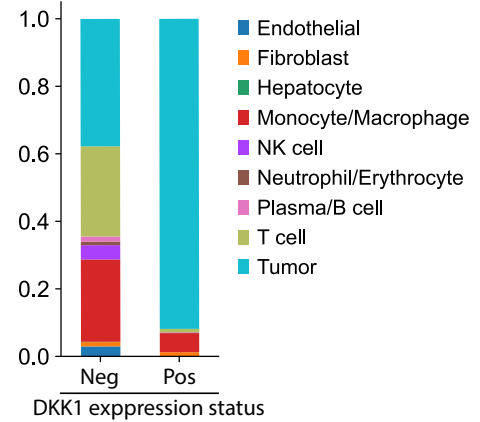
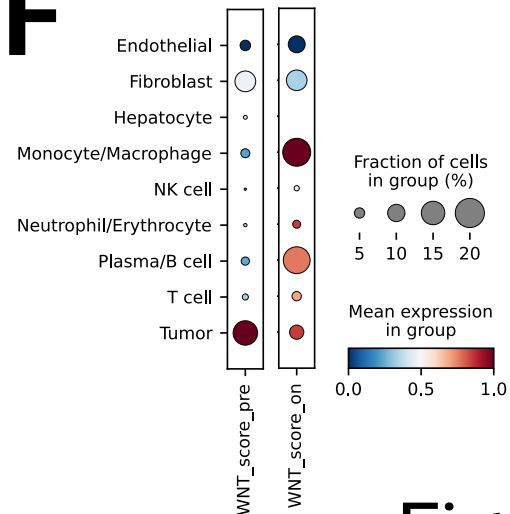
B**C****D****E****F**

Figure S3

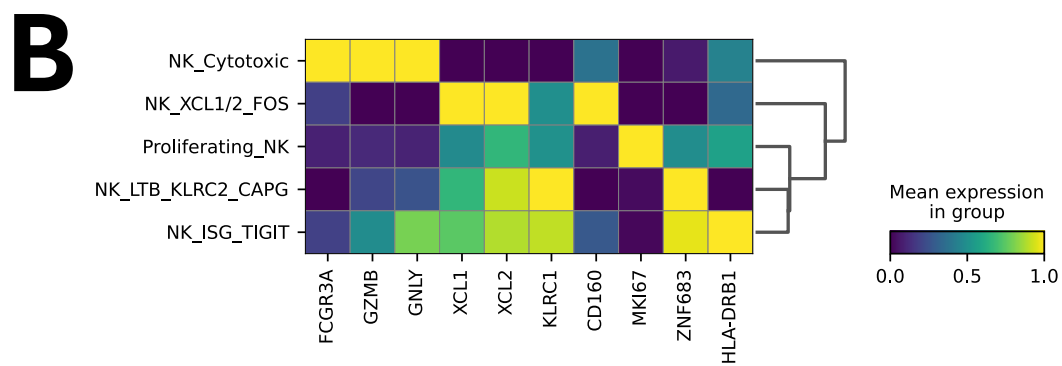
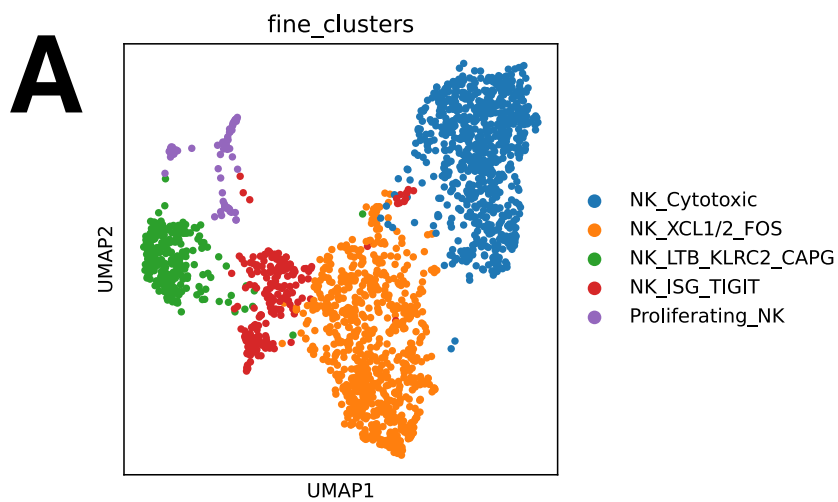


Figure S4

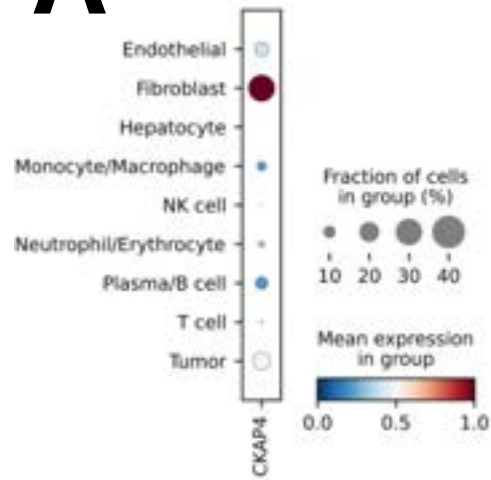
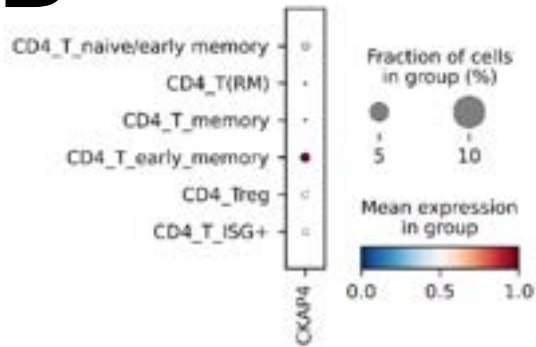
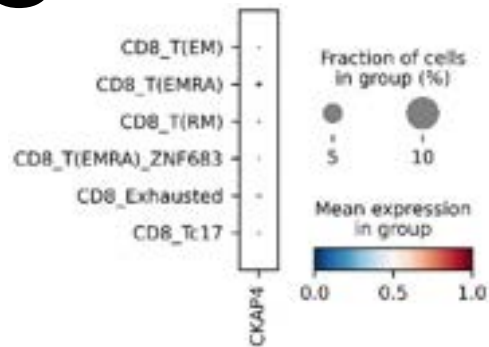
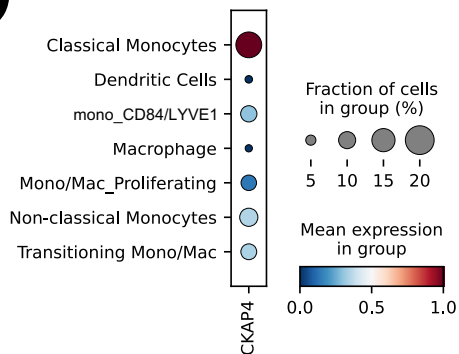
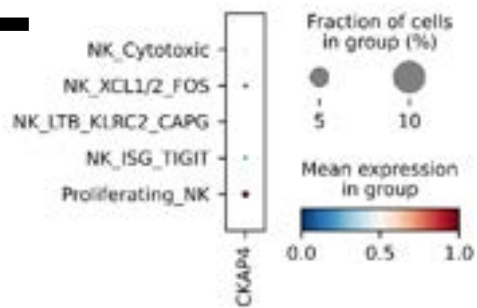
A**B****C****D****E**

Figure S5

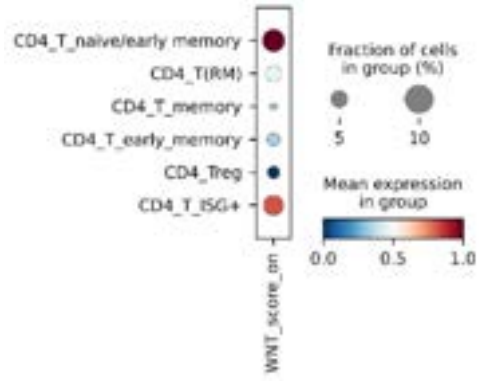
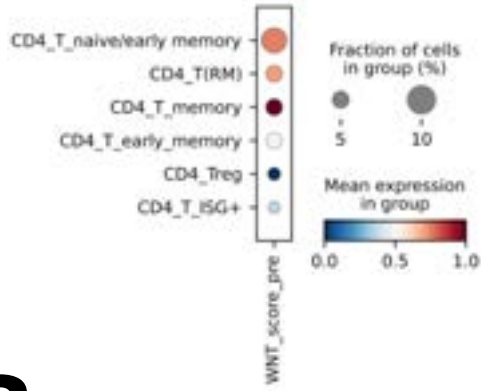
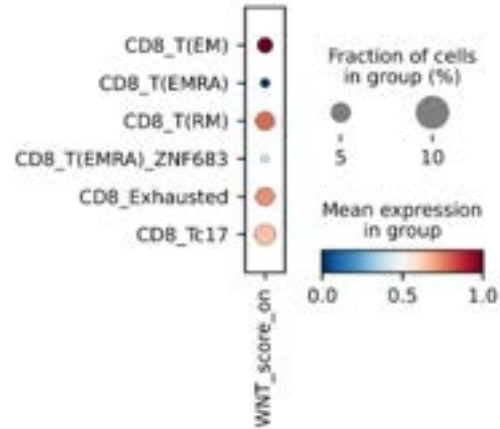
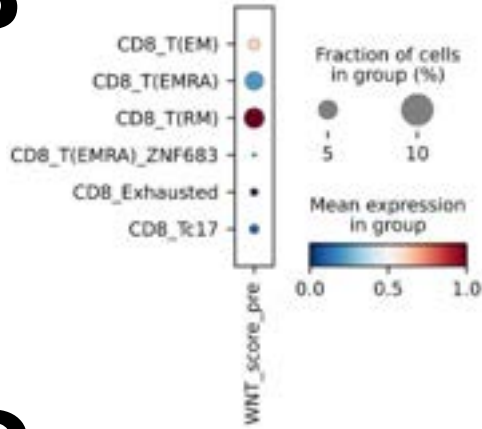
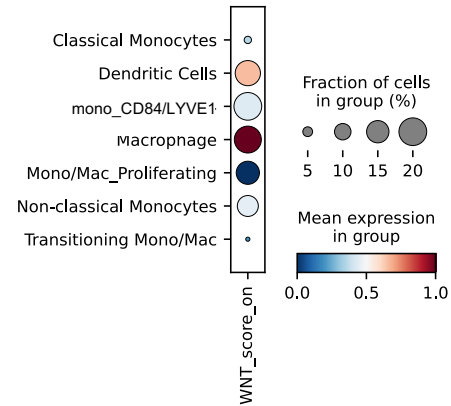
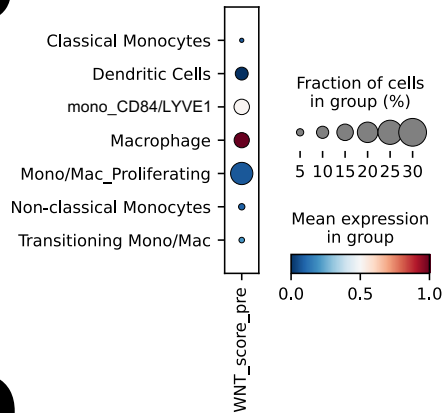
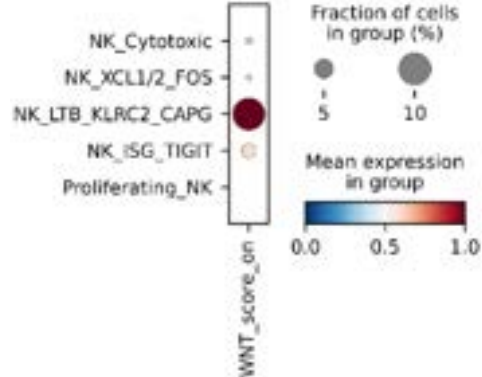
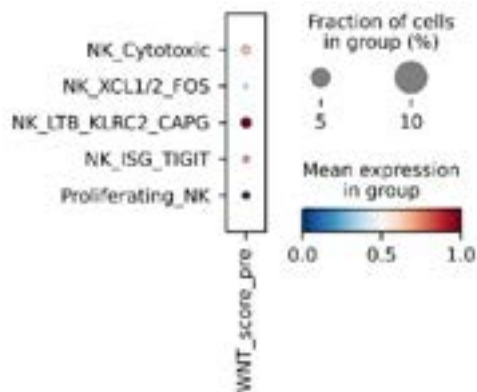
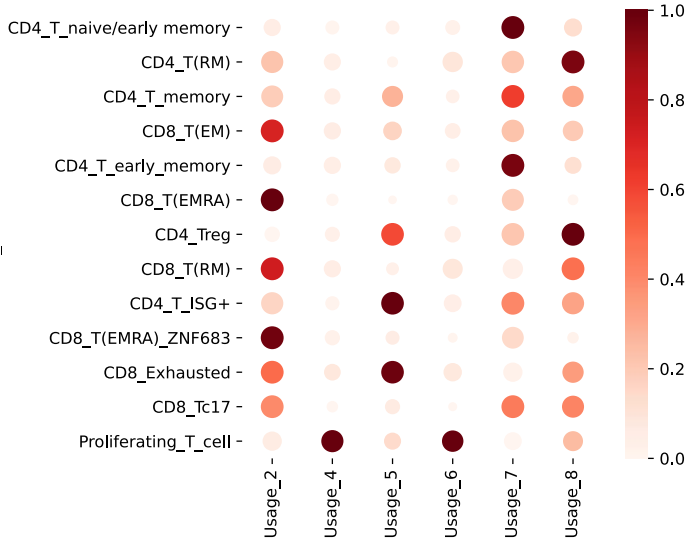
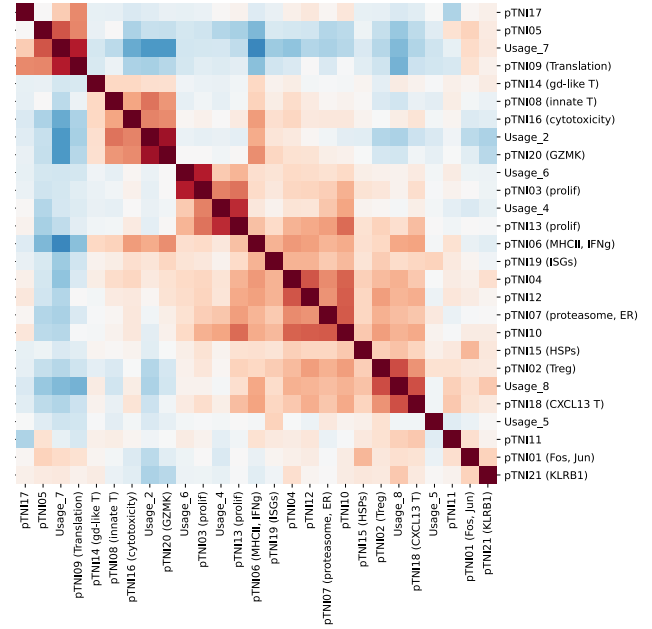
A**B****C****D**

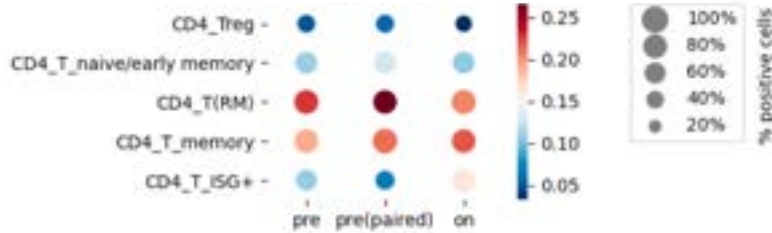
Figure S6

A

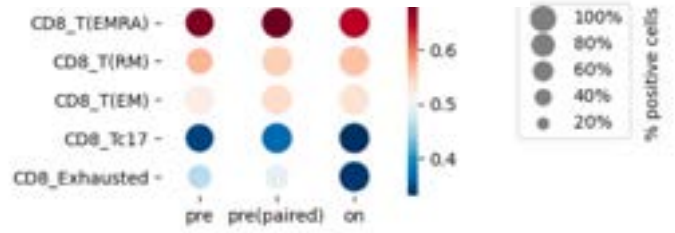
T cells cNMF program usages by T cell subset

**B****C****CD4****CD8**

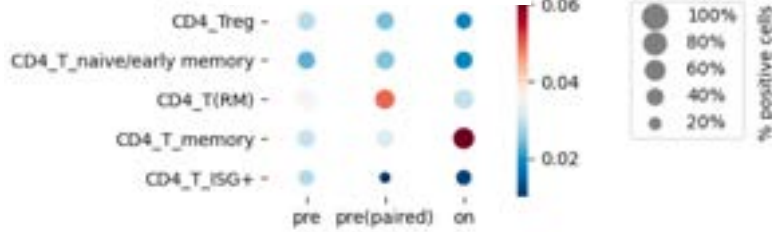
Usage_2: GZMK/memory/resident memory



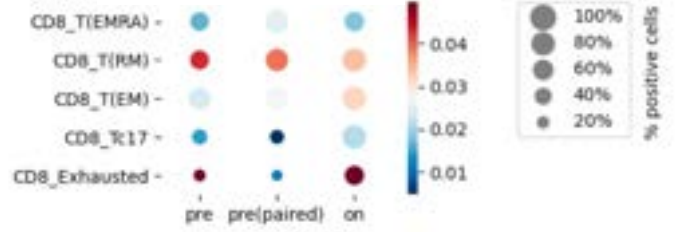
Usage_2: GZMK/memory/resident memory



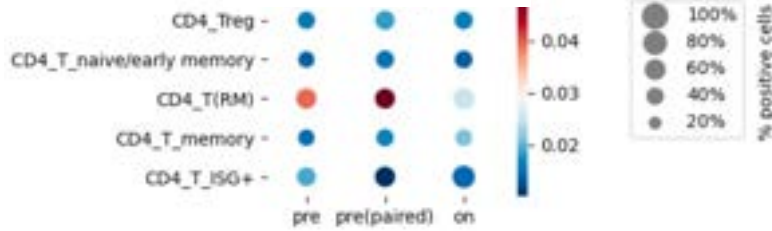
Usage_4: proliferation



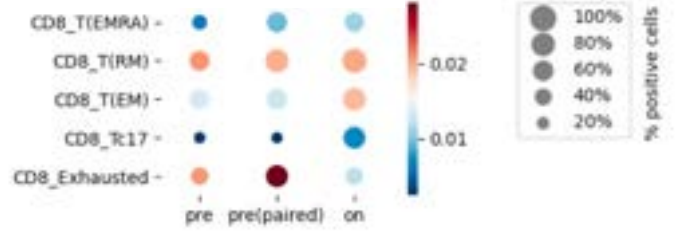
Usage_4: proliferation



Usage_6: proliferation



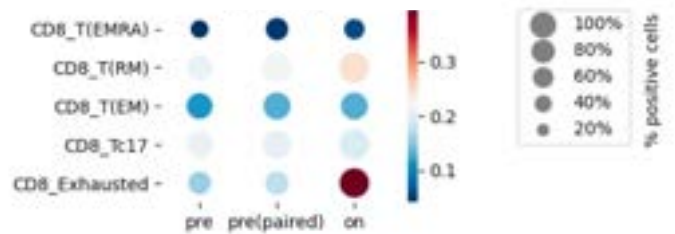
Usage_6: proliferation



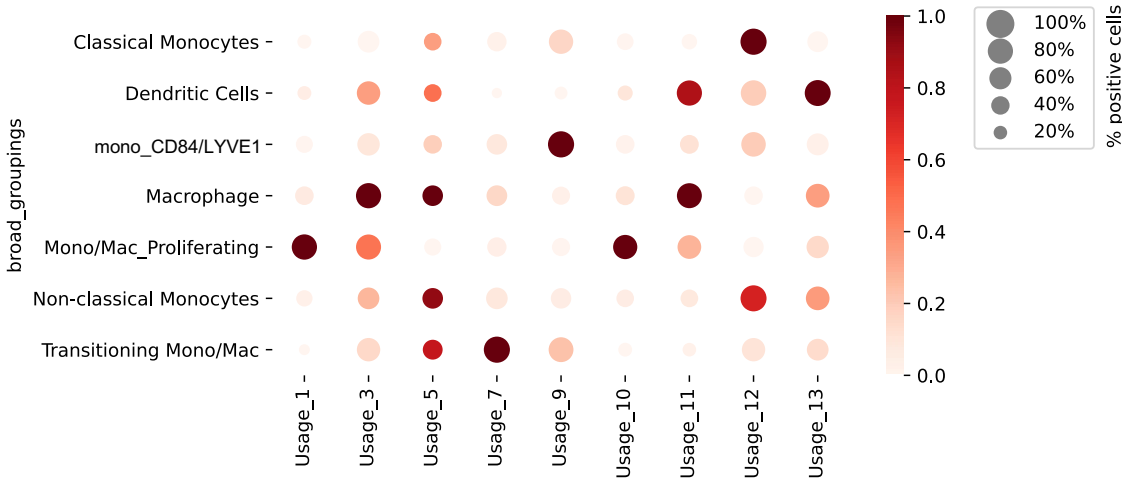
Usage_8: Treg, CXCL13+ CD8 T cell



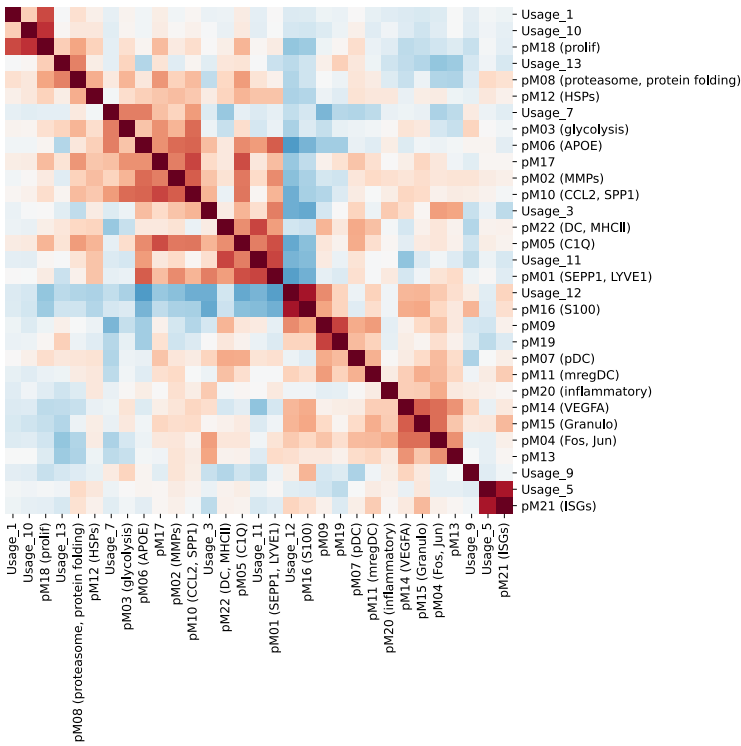
Usage_8: Treg, CXCL13+ CD8 T cell



A Myeloid cNMF program usages by myeloid subset



B



C

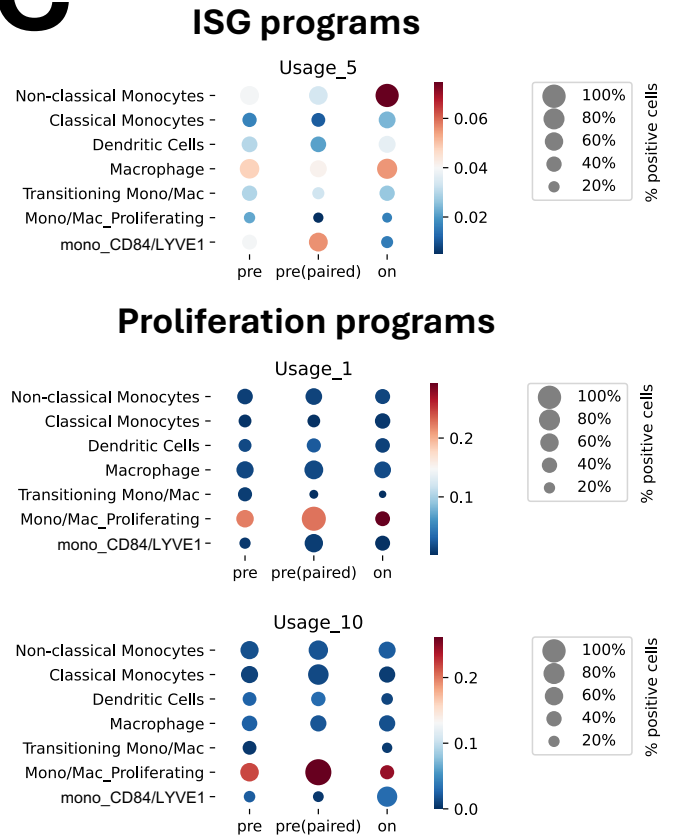
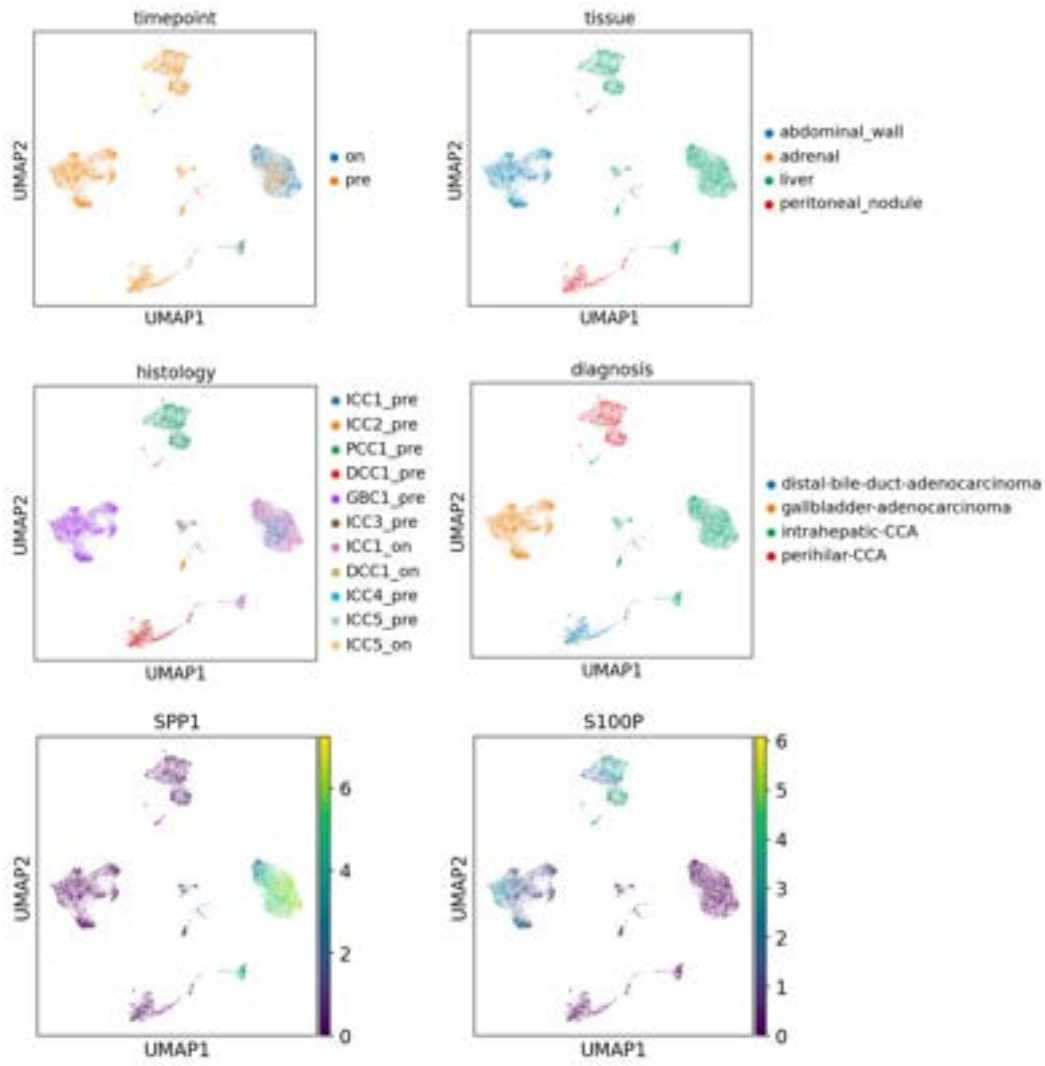
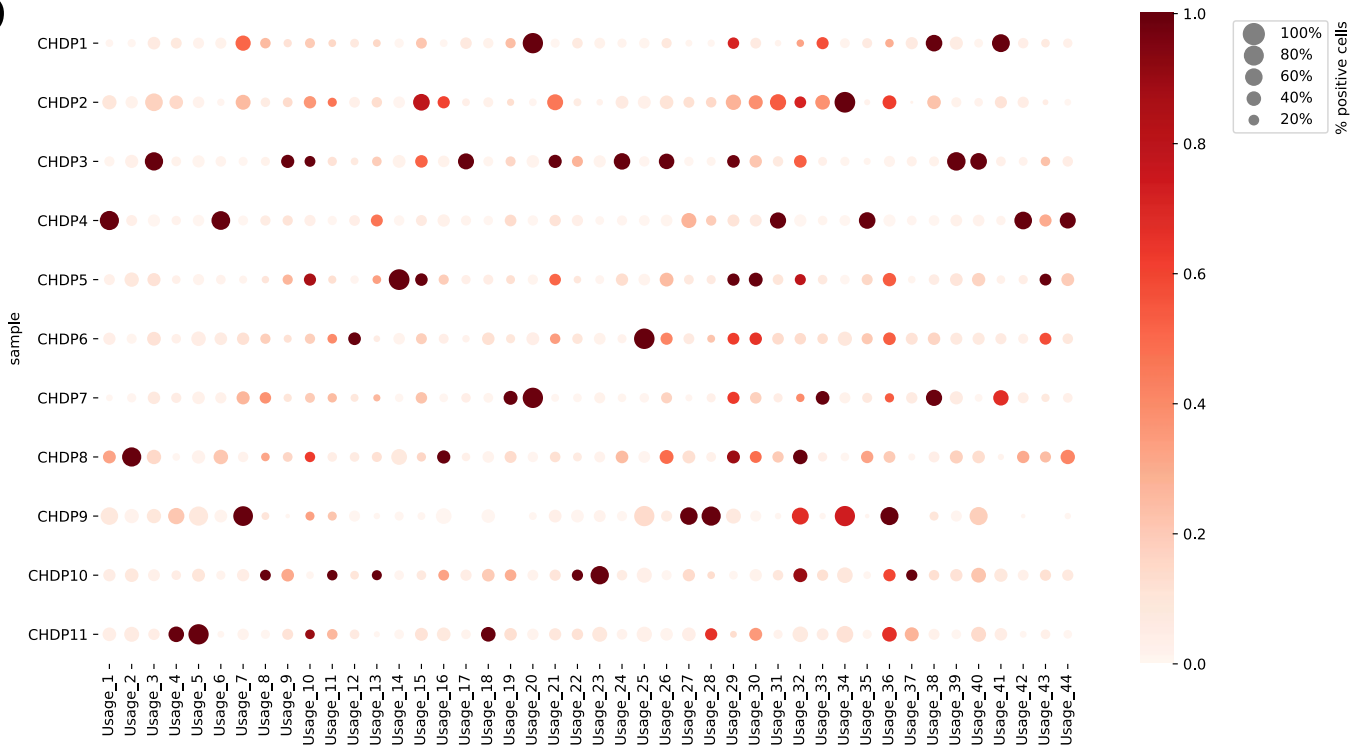


Figure S8

A**B****Figure S9**

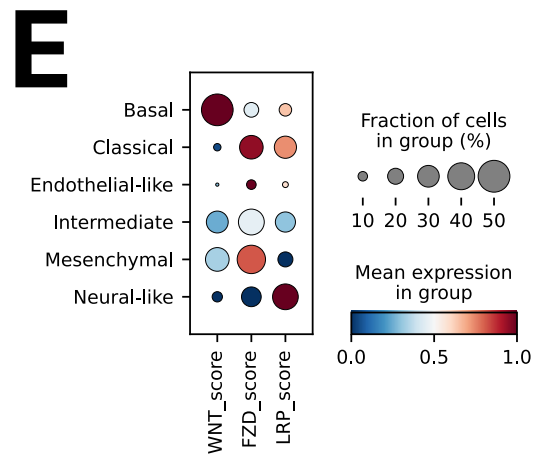
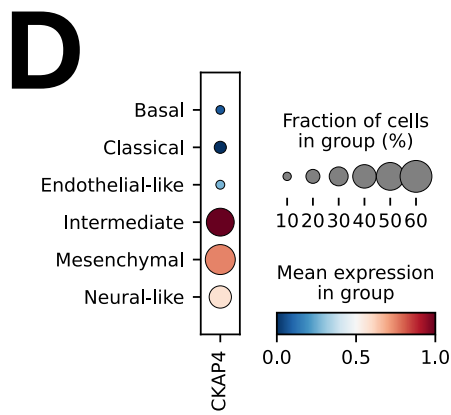
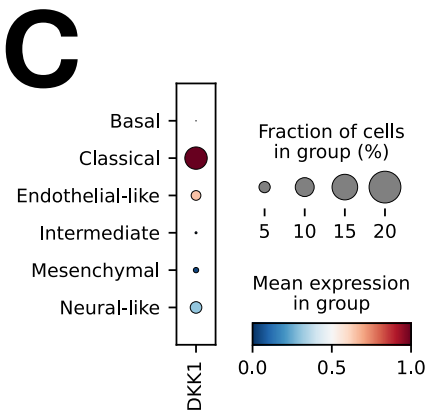
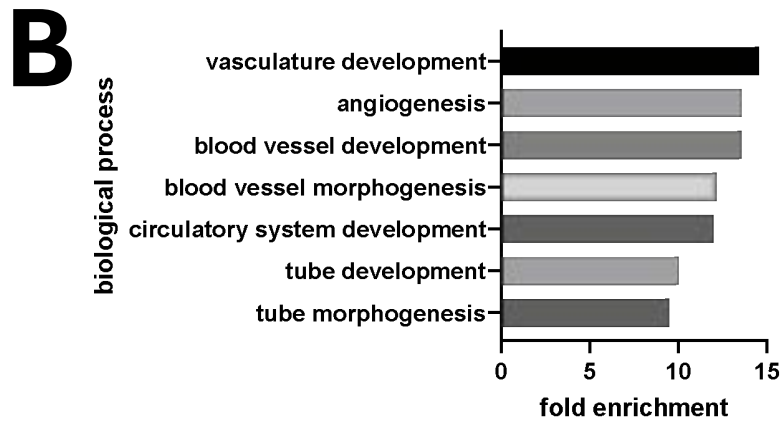
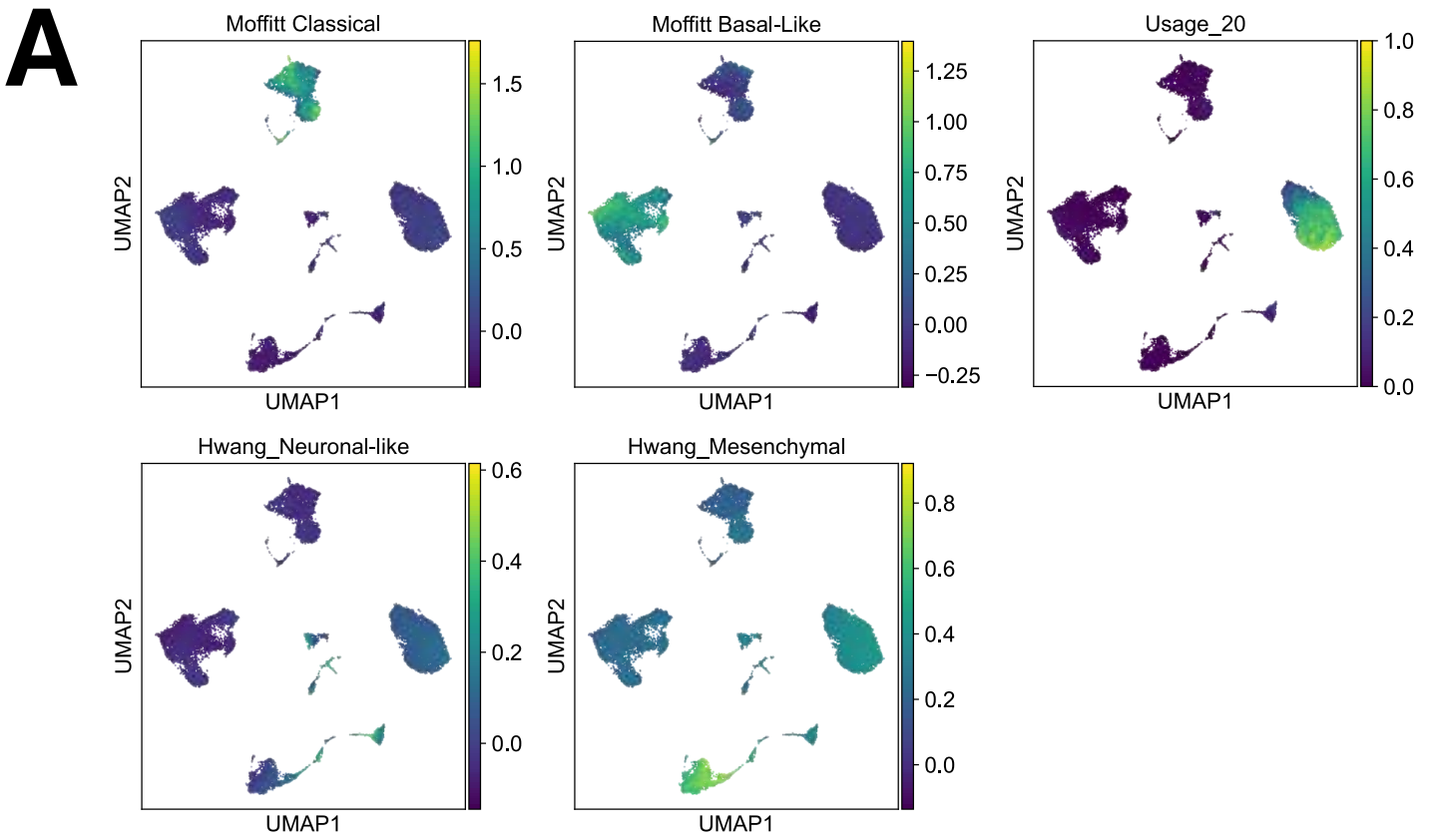


Figure S10

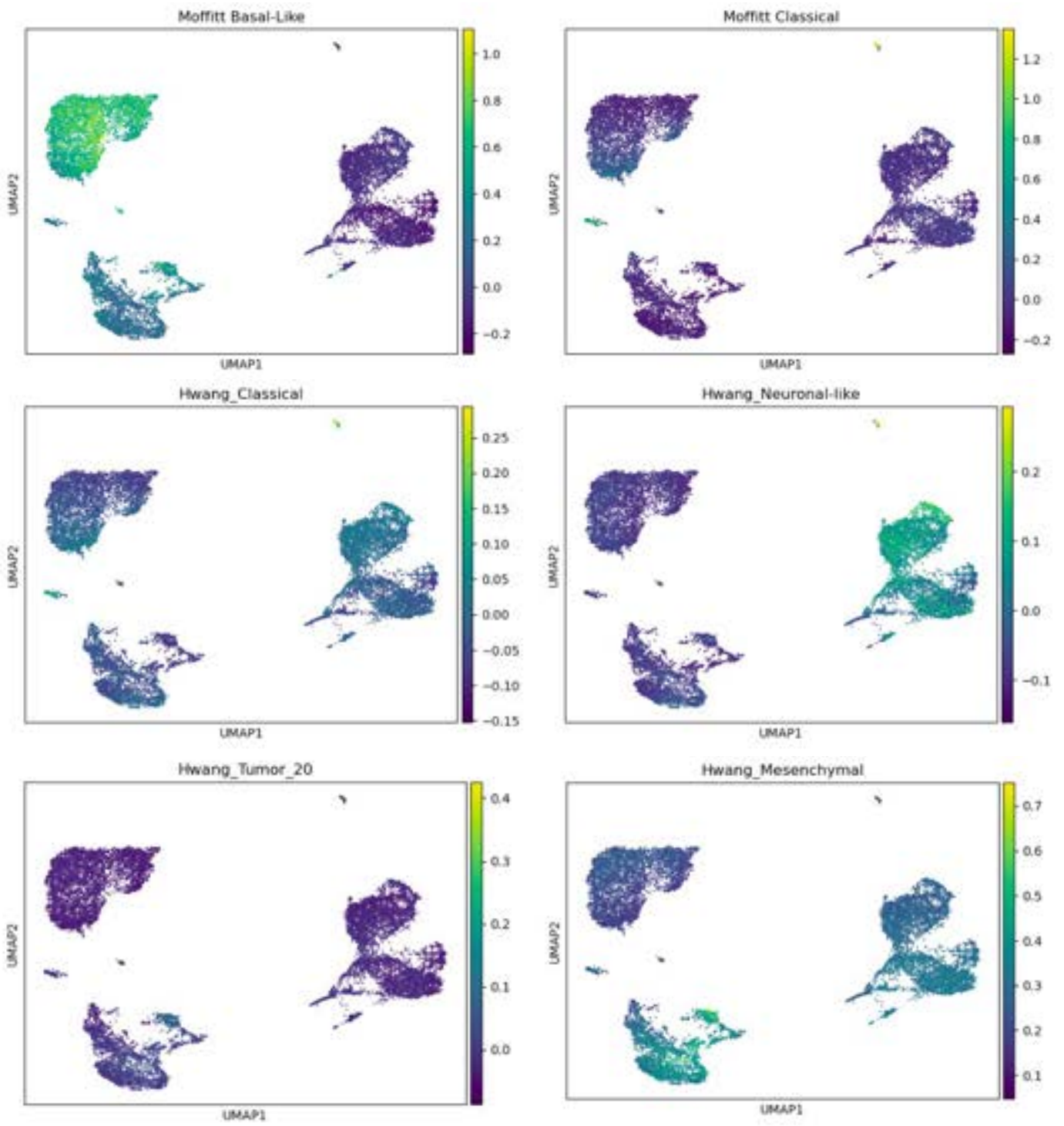


Figure S11

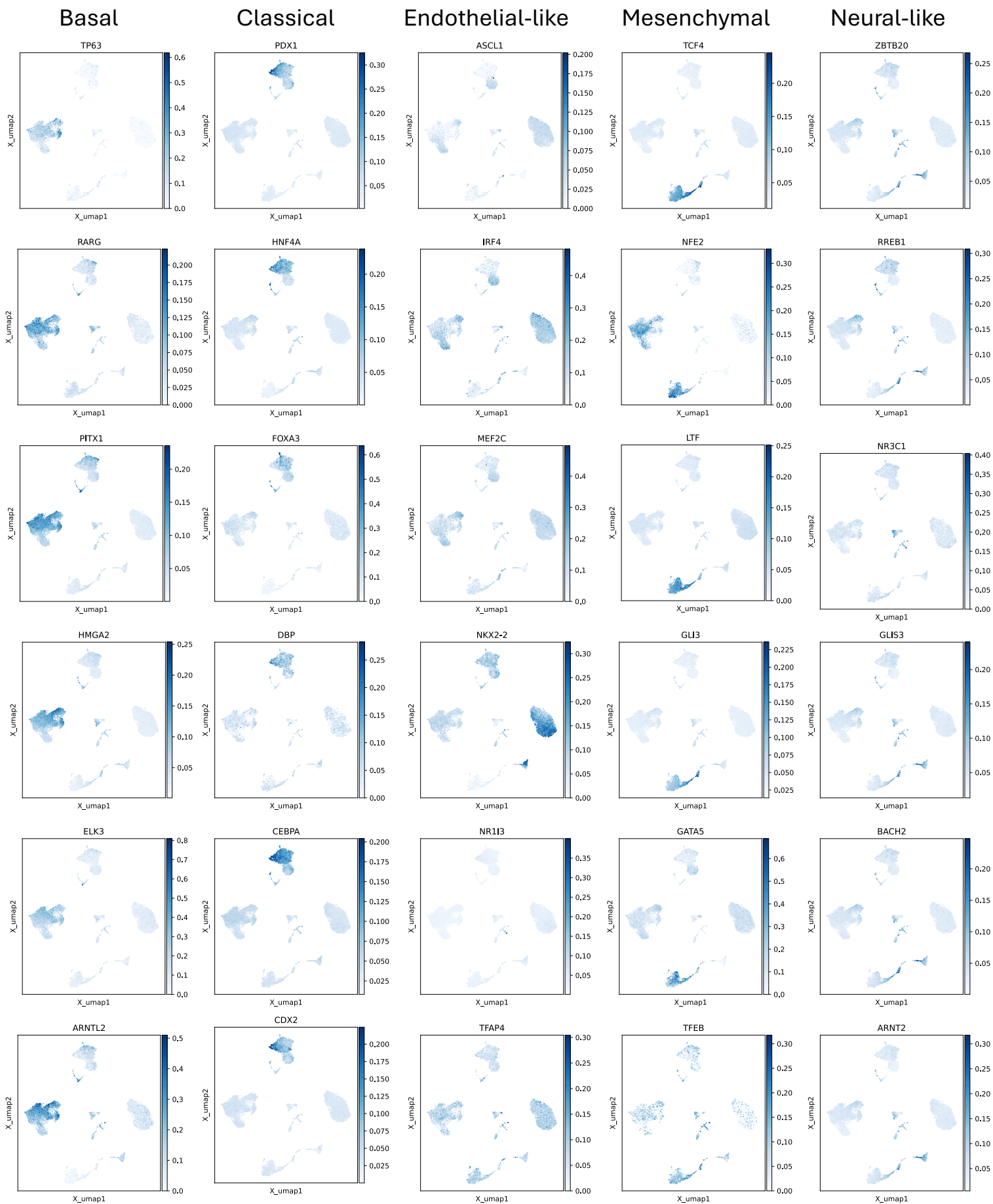


Figure S12