

**Supplemental Table S1. Primer sequences.**

Gene name	Sequence of primer(human)
CD260	F: TCGGGTTTATGGAGCAGGTG R: TGAACGGGAATGCACAGGTT
CD163	F: GCAATGGGGTGGACTTACCT R: TCACCATGCTTCACTTCAACAC
MMP9	F: CTGGTCCTGGTGCTCCTGGTG R: CTGCCTGTCGGTGAGATTGGTTC
AXL	F: GAACCTTCAACTCCTGCCTTCTCG R: CTCCATAACGGGTCTCCTTCTTTTCG
PROS1	F: CCGTCTTGGACAAAGCAATGAAAGC R: ACTGGTGTGGCACTGAATGGAAC

**Supplemental Table S2. Cell marker.**

Cell	Marker
Endothelial cells	PECAM1, CDH5
Hepatic stellate cells	ACTA2, PDGFRB
Normal epithelial cells	EPCAM, KRT19
Malignant cells	AFP, GPC3
NK cells	KLRB1, KLRD1
T cells	CD3D, CD4, CD8A
Macrophages	CD68, CD86, CD206
Dendritic cells	CD1C
B cells	CD79A