

Supplementary data

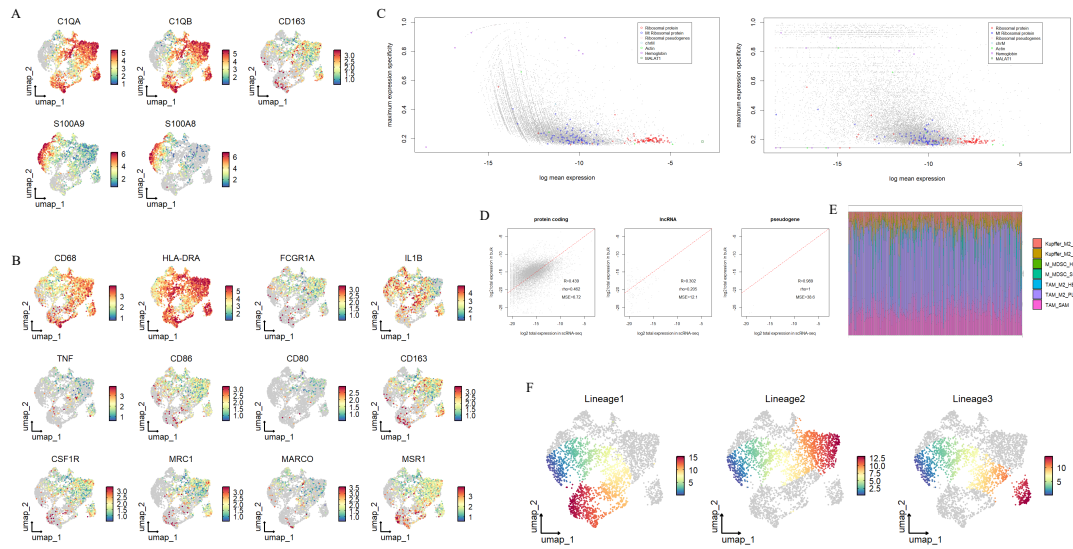


Figure S1. Macrophage subtype analysis. (A) Expression profiles of M1 and M2 macrophage marker genes in the original data by the authors. (B) Expression profiles of conventional M1 and M2 macrophage marker genes. (C-E) Proportions of different macrophage subtypes in TCGA data samples obtained through convolution using a Bayesian model. Results obtained after quality control (C) and parameter filtering (D-E). (F) Three cell trajectories generated by the Slingshot algorithm.

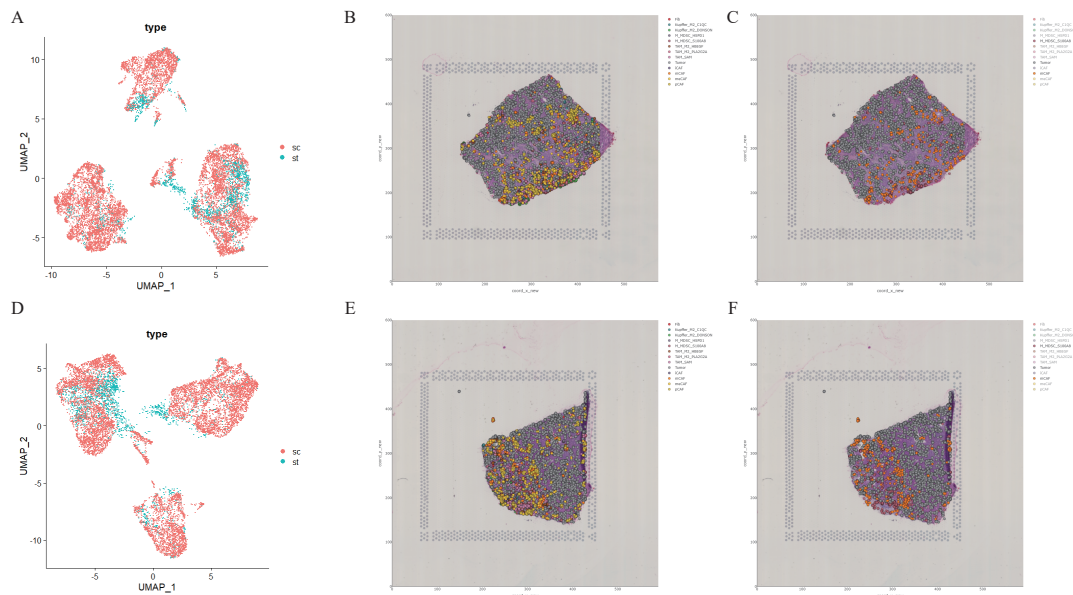


Figure S2. Single-cell resolution for cell localization on ST slices. (A, D) Integration of single-cell data and ST data. (B, C, E, F) Spatial localization of cells on ST slices.

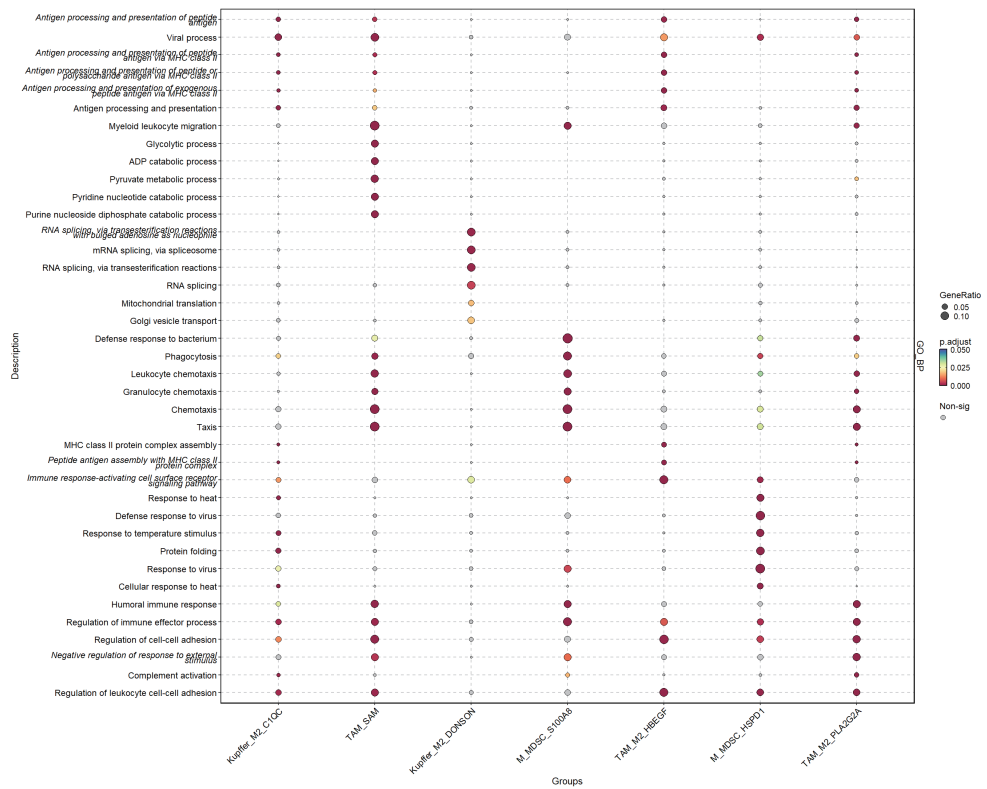


Figure S3. GO-BP enrichment analysis of different macrophage subtypes.

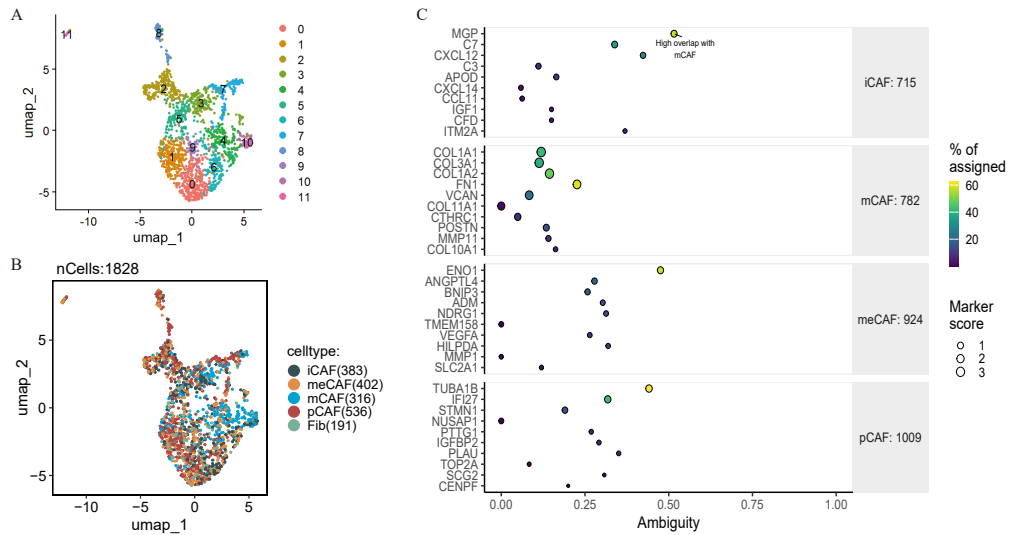


Figure S4. CAF classification. (A) Clusters obtained by the Seurat algorithm. (B-C) Machine learning-based classification of CAF subtypes using marker genes of confirmed CAF subtypes.

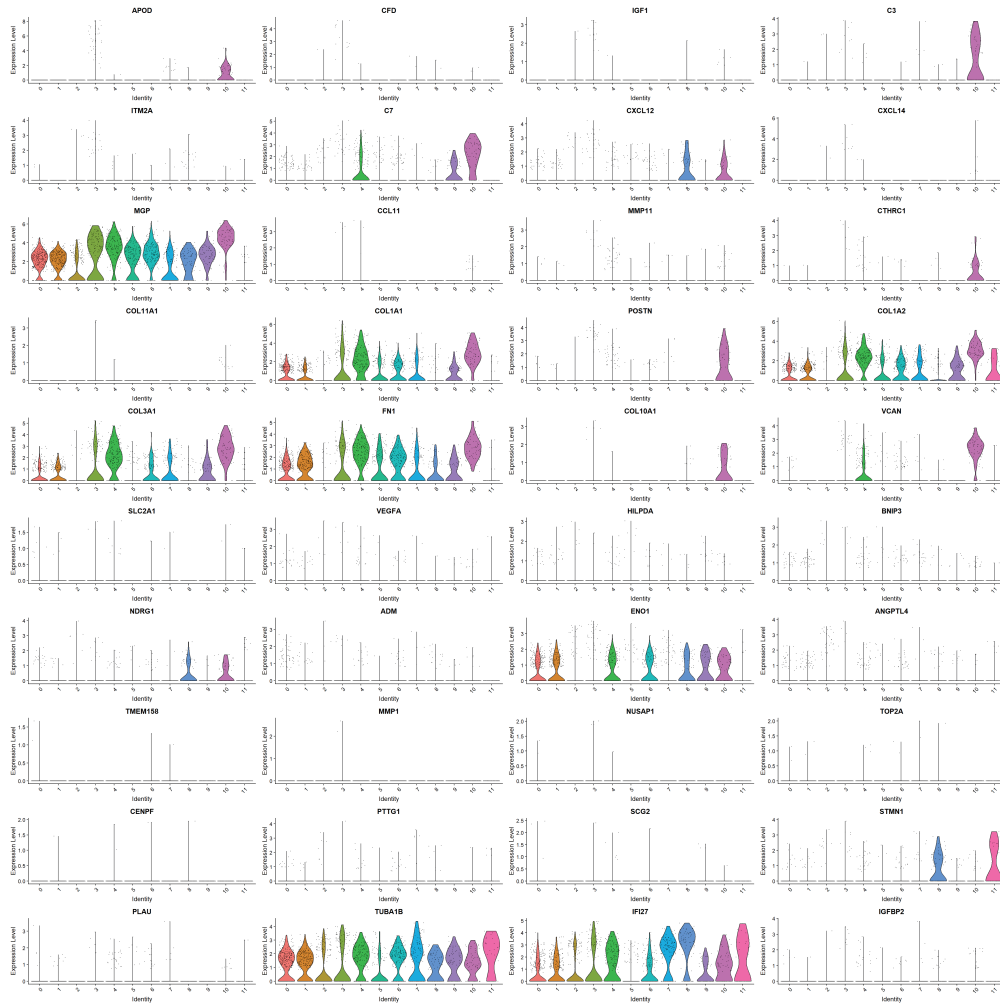


Figure S5. Expression of marker genes in different CAF clusters.

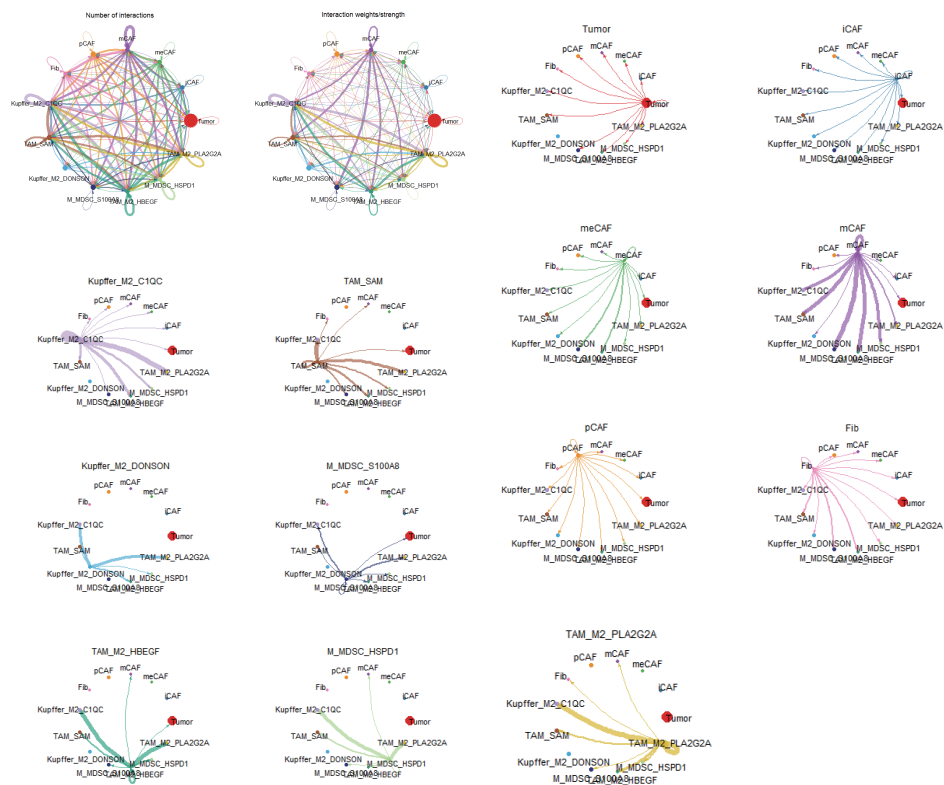


Figure S6. Intercellular communication between different macrophage subtypes and CAFs.

Table S1. Sequences of sgRNAs

Plasmid name	Target sequence
sg-SDC4-1	CAGCGCGAACAGACGGGCGG
sg-SDC4-2	GGTCGATGACCTCAGTCTCT
sg-SDC4-3	CTAGAAGGCCGATACTTCTC
sg-THBS1-1	TCACCGGGGCCGCCCCGCAAG
sg-THBS1-2	CAGCCCAGCTTTCCGCATCG
sg-THBS1-3	CTGGTGAAGACGCTTTGGAT

Table S2. Antibodies for western blot

Antibody	Order	Catalog	Dilution	Manufacturer
anti-SDC4	Primary	ab74139	1:1000	abcam
anti-THBS1	Primary	ab267388	1:1000	abcam
anti-Bax	Primary	60267-1-Ig	1:1000	Proteintech

anti-Bcl-xL	Primary	66020-1-Ig	1:1000	Proteintech
anti-Bcl-2	Primary	60178-1-Ig	1:1000	Proteintech
anti-E-Cadherin	Primary	60335-1-Ig	1:1000	Proteintech
anti-N-Cadherin	Primary	66219-1-Ig	1:1000	Proteintech
anti-Vimentin	Primary	60330-1-Ig	1:1000	Proteintech
anti-GAPDH	Primary	60004-1-Ig	1:2000	Proteintech
anti-Mouse	Secondary	7076	1:2000	CST
anti-Rabbit	Secondary	7074	1:2000	CST

Table S3. Antibodies for immunofluorescence

Antibody	Order	Catalog	Dilution	Manufacturer
anti-THBS1	Primary	ab267388	1:100	abcam
anti-MNDA	Primary	ab316967	1:50	abcam
anti-VCAN	Primary	ab270445	1:200	abcam
anti-PLAUR	Primary	ab221680	1:30	abcam
anti-Collagen I	Primary	ab316222	1:50	abcam
anti-Collagen IV	Primary	ab6586	1:200	abcam
anti-ACTG2	Primary	PA5-105279	1:200	Invitrogen
Goat anti-Mouse IgG (H+L) Cross-Adsorbed Secondary Antibody, Alexa Fluor™ 488	Secondary	A-11001	1:200	Invitrogen
Goat anti-Rabbit IgG (H+L) Cross-Adsorbed Secondary Antibody, Alexa Fluor™ 488	Secondary	A-11008	1:200	Invitrogen

Table S4. Antibodies for IHC

Antibody	Order	Catalog	Dilution	Manufacturer
anti-SDC4	Primary	ab74139	1:100	abcam
anti-Ki67	Primary	GB121141	1:500	Servicebio
anti-C-Casp3	Primary	GB11532	1:500	Servicebio
anti-E-Cadherin	Primary	GB12083	1:500	Servicebio

anti-N-Cadherin	Primary	GB12135	1:500	Servicebio
anti-Rabbit/Mouse	Secondary	SP B3	KIT- Directedly used	MAXIM

Table S5. Antibodies for FACS

Antibody	Fluorophore	Catalog	Dilution	Manufacturer
anti-HLA-DR	FITC	327005	1:40	Biolegnd
anti-CD33	PerCP-Cy5.5	366615	1:40	Biolegnd
anti-CD11b	PE	340005	1:40	Biolegnd
anti-CD14	APC	325607	1:40	Biolegnd

Data S1. (separate file)

Hall markers of cell clusters.