

Supplementary tables**Supplementary Table S1. Centers for external validation.**

Center	Location
Zhejiang Provincial People's Hospital	Hangzhou, Zhejiang
The First Affiliated Hospital, Wenzhou University School of Medicine	Wenzhou, Zhejiang
Zhejiang Cancer Hospital	Hangzhou, Zhejiang
Sanmen People's Hospital	Taizhou, Zhejiang
Huzhou Central Hospital	Huzhou, Zhejiang
Changxing People's Hospital	Huzhou, Zhejiang
Ningbo Medical Center Lihuili Eastern Hospital	Ningbo, Zhejiang
Shengzhou People's Hospital	Shaoxing, Zhejiang
Shangyu Hospital of Chinese Medicine	Shaoxing, Zhejiang
Haining People's Hospital	Jiaxing, Zhejiang
Jiaxing Second People's Hospital	Jiaxing, Zhejiang
The Second Affiliated Hospital of Nanchang University	Nanchang, Jiangxi
The Second Hospital of Hebei Medical University	Shijiazhuang, Hebei
Jixi County People's Hospital	Xuancheng, Anhui

Supplementary Table S2. The antibody panel for CyTOF.

Label	Marker	Clone	Vendor
89Y	CD45	HI30	BioLegend
115In	CD3	UCHT1	Bioxcell
141Pr	CD56	NCAM16.2	BD
142Nd	TCR γ/δ	5A6.E9	Invitrogen
143Nd	CD196 (CCR6)	G034E3	BioLegend
144Nd	CD14	M5E2	BioLegend
145Nd	IgD	IA6-2	BioLegend
146Nd	CD123 (IL-3R α)	6H6	BioLegend
147Sm	CD85j (ILT2)	GHI/75	BioLegend
148Nd	CD19	HIB19	BioLegend
149Sm	CD25 (IL-2R α)	24212	RD
150Nd	CD274 (PD-L1)	29E.2A3	BioLegend
151Eu	CD278 (ICOS)	C398.4A	BioLegend
152Sm	CD39	A1	BioLegend
153Eu	CD27	O323	BioLegend
154Sm	CD24	ML5	BioLegend
155Gd	CD45RA	HI100	BioLegend
156Gd	CD86	Fun-1	BD
157Gd	CD28	CD28.2	BioLegend
158Gd	CD197 (CCR7)	G043H7	BioLegend
159Tb	CD11c	BU15	BioLegend
160Gd	CD33	WM53	BioLegend
161Dy	CD152 (CTLA-4)	14D3	eBioscience
163Dy	CD161	HP-3G10	BioLegend
164Dy	CD185 (CXCR5)	RF8B2	BD

165Ho	CD66b	G10F5	BioLegend
166Er	CD183 (CXCR3)	G025H7	BioLegend
167Er	CD94	HP-3D9	BD
168Er	CD57	HNK-1	BioLegend
169Tm	CD45RO	UCHL1	BioLegend
170Er	CD127 (IL-7R α)	A019D5	BioLegend
171Yb	CD279 (PD-1)	EH12.2H7	BioLegend
172Yb	CD38	HIT2	BioLegend
173Yb	CD194 (CCR4)	L291H4	BioLegend
174Yb	CD20	2H7	BioLegend
175Lu	CD16	3G8	BioLegend
176Yb	HLA-DR	L243	BioLegend
197Au	CD4	RPA-T4	BioLegend
198Pt	CD8a	RPA-T8	BioLegend
209Bi	CD11b	M1/70	BioLegend

Supplementary Table S3. The demographic and clinicopathological parameters of the hepatic group

	HCC	Hepatic benign diseases	Healthy controls
Total (n)	790	341	633
Gender			
Male – no. (%)	650 (82.2)	140 (41.1) ***	350 (55.3) ***
Female – no. (%)	140 (17.8)	201 (58.9)	283 (44.7)
Age (years)			
Mean	59.0	49.4 ***	46.4 ***
Range	12-89	12-90	16-89
Hypertension	231 (29.2)	55 (16.1) ***	92 (14.5) ***
Diabetes	117 (14.8)	12 (3.5) ***	47 (7.4) ***
Laboratory tests (mean)			
Red blood cell, 10 ¹² /L (range)	4.5 (2.5 – 7.0)	4.5 (2.7 – 6.1)	4.9 (3.7 – 6.1) ***
Hemoglobin, g/L (range)	141.3 (73 – 192)	138.3 (80 – 180) *	146.4 (100 – 190) ***
White blood cell, 10 ⁹ /L (range)	5.6 (1.2 – 19.5)	6.0 (2.2 – 13.8) **	6.0 (3.3 – 14.8) **
Neutrophil, 10 ⁹ /L (range)	3.6 (0.8 – 17.1)	3.7 (1.0 – 12.2)	3.4 (1.5 – 11.4)
Lymphocyte, 10 ⁹ /L (range)	1.5 (0.28 – 5.5)	1.8 (0.2 – 10.3) ***	2.0 (1.0 – 3.7) ***
Platelet, 10 ⁹ /L (range)	159.1 (24 – 616)	216.0 (44 – 419) ***	236.9 (117 – 600) ***
ALT, U/L (range)	39.1 (3 – 747)	31.6 (4 – 406) *	23.2 (3 – 105) ***
AST, U/L (range)	46.8 (8 – 1232)	29.5 (10 – 384) ***	23.0 (12 – 78) ***
Total bilirubin, µmol/L	18.7 (2.1 – 490.4)	13.5 (3.7 – 49.5) ***	12.3 (3.5 – 35.1)

(range)			***
Albumin, g/L (range)	42.1 (21.6 – 80.0)	44.3 (25.6 – 54.6) ***	48.0 (41.3 – 54) ***
AFP value			
> 20 ng/ml	508 (64.3)	6 (1.8) ***	1 (0.2) ***
≤ 20 ng/ml	282 (35.7)	335 (98.2)	632 (99.8)
HBV infection			
Positive	611 (77.3)	91 (26.7) ***	32 (5.1) ***
Negative	178 (22.5)	241 (70.7)	601 (94.9)
NA	1 (0.2)	9 (2.6)	0 (0.0)
BCLC stage			
0	117 (14.8)	NA	NA
A	500 (63.3)	NA	NA
B	69 (8.7)	NA	NA
C-D	104 (13.2)	NA	NA
MVI grade			
0	408 (51.6)	NA	NA
1	123 (15.6)	NA	NA
2	30 (3.8)	NA	NA
NA	229 (29.0)	NA	NA
Differentiation			
Low	167 (21.1)	NA	NA
Moderately	339 (42.9)	NA	NA
High	45 (5.7)	NA	NA
Unknown	239 (30.3)	NA	NA

Note: AFP, alpha-fetoprotein; ALT, alanine aminotransferase; AST, Aspartate transaminase; BCLC, Barcelona Clinic Liver Cancer; HBV, hepatitis B virus; MVI, microvascular invasion; NA, not

available. *, $P < 0.05$; ** $P < 0.01$; ***, $P < 0.001$ (compared to HCC group).

Supplementary Table S4. The demographic and clinicopathological parameters of the training set in hepatic group

	HCC	Hepatic benign diseases	Healthy controls
Total (n)	450	150	300
Gender			
Male – no. (%)	305 (67.8)	51 (34.0) ***	168 (56.0) **
Female– no. (%)	145 (32.2)	99 (66.0)	132 (44.0)
Age (years)			
Mean	56.9	48.8 ***	54.2
Range	19-76	18-90	24-89
Hypertension	115 (25.6)	21 (14.0) **	47 (15.7) **
Diabetes	56 (12.4)	3 (2.0) ***	22 (7.3) *
Laboratory tests (mean)			
Red blood cell, 10 ¹² /L (range)	4.6 (2.5 – 7.0)	4.5 (2.9 – 6.1)	4.9 (3.9 – 6.0) ***
Hemoglobin, g/L (range)	143.9 (73 – 192)	136.3 (85 – 180) ***	149.9 (103 – 184) **
White blood cell, 10 ⁹ /L (range)	5.7 (2.3 – 12.7)	6.0 (2.3 – 11.4)	6.1 (3.3 – 14.8)
Neutrophil, 10 ⁹ /L (range)	3.6 (0.9 – 10.6)	3.8 (1.0 – 10.7)	3.5 (1.5 – 10.1)
Lymphocyte, 10 ⁹ /L	1.6 (0.4 – 4.1)	1.8 (0.2 – 10.3) **	2.0 (1.0 – 3.7) ***

(range)			
Platelet, 10 ⁹ /L (range)	162.4 (25 – 616)	221.2 (82 – 418) ***	229.0 (117 – 600) ***
ALT, U/L (range)	37.6 (3 – 308)	30.0 (5 – 331) **	24.0 (6 – 78) **
AST, U/L (range)	43.0 (11 – 590)	28.2 (10 – 374) **	22.4 (14 – 40) **
Total bilirubin, µmol/L (range)	18.9 (2.1 – 490.4)	11.6 (3.7 – 34.8) ***	13.4 (3.5 – 35.1)
Albumin, g/L (range)	43.0 (23.6 – 80.0)	44.2 (25.6 – 51.7) **	47.4 (41.3 – 53.5) ***
AFP value			
> 20 ng/ml	284 (63.1)	4 (2.7) ***	0 (0.0) ***
≤ 20 ng/ml	166 (36.9)	146 (97.3)	300 (100.0)
HBV infection			
Positive	362 (80.4)	19 (12.7) ***	22 (7.3) ***
Negative	87 (19.3)	131 (87.3)	278 (92.7)
Unknown	1 (0.3)	0 (0.0)	0 (0.0)
BCLC stage			
0	65 (14.4)	NA	NA
A	292 (64.9)	NA	NA
B	39 (8.7)	NA	NA

C-D	54 (12.0)	NA	NA
MVI grade			
0	244 (54.2)	NA	NA
1	69 (15.3)	NA	NA
2	16 (3.6)	NA	NA
NA	121 (26.9)	NA	NA
Differentiation			
Low	100 (22.2)	NA	NA
Moderately	206 (45.8)	NA	NA
High	16 (3.6)	NA	NA
Unknown	128 (28.4)	NA	NA

Note: AFP, alpha-fetoprotein; ALT, alanine aminotransferase; AST, Aspartate transaminase; BCLC, Barcelona Clinic Liver Cancer; HBV, hepatitis B virus; MVI, microvascular invasion; NA, not available. *, $P < 0.05$; **, $P < 0.01$; ***, $P < 0.001$ (compared to HCC group).

Supplementary Table S5. The demographic and clinicopathological parameters of the pancreatic group

	PDAC	Pancreatic benign diseases	Healthy controls
Total (n)	376	208	632
Gender			
Male – no. (%)	221 (58.8)	81 (38.9) ***	349 (55.2)
Female – no. (%)	155 (41.2)	127 (61.1)	283 (44.8)
Age (years)			
Mean	64.3	53.2 ***	46.5 ***
Range	22-88	13-82	16-89
Hypertension	133 (35.4)	61 (29.3)	102 (16.1) *
Diabetes	78 (20.7)	22 (10.6) **	47 (7.4) ***
Laboratory tests (mean)			
Red blood cell, 10 ¹² /L (range)	4.3 (2.0 – 5.9)	4.4 (2.8 – 6.3) **	4.9 (3.7 – 6.13) ***
Hemoglobin, g/L (range)	130.6 (57 – 173)	134.3 (84 – 179) **	146.4 (100 – 190) ***
White blood cell, 10 ⁹ /L (range)	6.4 (2.5 – 19.5)	6.4 (2.6 - 17.8)	6.0 (3.3 – 14.8) *
Neutrophil, 10 ⁹ /L (range)	4.5 (1.4 – 17.7)	4.3 (1.2 – 17.0)	3.4 (1.5 – 11.4) ***
Lymphocyte, 10 ⁹ /L (range)	1.3 (0.3 – 3.3)	1.6 (0.3 – 3.2) ***	2.0 (1.0 – 3.7) ***
Platelet, 10 ⁹ /L (range)	212.6 (55 – 541)	226.8 (70-801) **	236.9 (117 – 600) ***
ALT, U/L (range)	97.7 (2 – 1403)	37.1 (5 – 1226) ***	23.2 (3 – 105) ***
AST, U/L (range)	66.5 (8 – 619)	31.3 (9 – 1112) ***	22.9 (12 – 78) ***
Total bilirubin, µmol/L	59.0 (3.0 – 547.6)	16.9 (3.0 – 390.1) ***	12.3 (3.5 – 35.1) ***

(range)			
Albumin, g/L (range)	41.6 (25.0 – 52.2)	43.5 (27.7 - 54.1) ***	48.0 (41.3 – 54) ***
CA19-9 value			
> 37 U/ml	293 (77.9)	24 (11.5) ***	5 (0.8) ***
≤ 37 U/ml	83 (22.1)	184 (88.5)	627 (99.2)
Resectability			
RPC	134 (35.6)	NA	NA
BRPC-LAPC	136 (36.2)	NA	NA
MPC	106 (28.2)	NA	NA
Differentiation			
Low	53 (14.1)	NA	NA
Moderately	54 (14.4)	NA	NA
High	2 (0.5)	NA	NA
Unknown	267 (71.0)	NA	NA

Note: ALT, alanine aminotransferase; AST, Aspartate transaminase; BRPC, borderline resectable pancreatic cancer; CA19-9, carcinoma antigen 19-9; LAPC, locally advanced pancreatic cancer; MPC, metastatic pancreatic cancer; NA, not available; RPC, resectable pancreatic cancer. *, $P < 0.05$; **, $P < 0.01$; ***, $P < 0.001$ (compared to PDAC group).

Supplementary Table S6. The demographic and clinicopathological parameters of the training set in pancreatic group

	PDAC	Pancreatic benign diseases	Healthy controls
Total (n)	250	100	150
Gender			
Male– no. (%)	146 (58.4)	35 (35.0) ***	83 (55.3)
Female – no. (%)	104 (41.6)	65 (65.0)	67 (44.7)
Age (years)			
Mean	63.5	54.7 ***	60.6
Range	22-88	13-82	30-89
Hypertension	86 (34.4)	33 (33.0)	23 (15.3) ***
Diabetes	49 (19.6)	11 (11.0)	19 (12.7)
Laboratory tests (mean)			
Red blood cell, 10 ¹² /L (range)	4.3 (2.3 – 5.9)	4.4 (2.8 – 5.4)	4.9 (4.2 – 5.9) ***
Hemoglobin, g/L (range)	131.6 (57 – 173)	134.5 (90 – 173)	148.7 (115 – 170) ***
White blood cell, 10 ⁹ /L (range)	6.3 (2.5 – 19.5)	6.7 (3.4 - 17.8)	6.1 (3.8 – 8.6)
Neutrophil, 10 ⁹ /L (range)	4.4 (1.4 – 17.7)	4.6 (1.2 – 17.0)	3.5 (2.1 – 5.5) ***

Lymphocyte, 10 ⁹ /L (range)	1.3 (0.3 – 3.3)	1.6 (0.3 – 3.2) ***	2.0 (1.0 – 3.3) ***
Platelet, 10 ⁹ /L (range)	211.2 (55 – 506)	227.8 (70 - 480) **	227.0 (119 – 318)
ALT, U/L (range)	96.0 (5 – 1403)	37.2 (5 – 921) ***	21.3 (6 – 105) ***
AST, U/L (range)	65.8 (8 – 619)	35.5 (9 – 1112) *	25.5 (14 – 78) ***
Total bilirubin, µmol/L (range)	59.7 (3.0 – 547.6)	18.6 (3.0 – 390.1) ***	12.3 (4.6 – 30.4) ***
Albumin, g/L (range)	42.1 (25.8 – 52.2)	43.5 (28.8 - 52.4) *	46.9 (41.3 – 53) ***
CA19-9 value			
> 37 U/ml	194 (77.6)	14 (14.0) ***	0 (0.0) ***
≤ 37 U/ml	56 (22.4)	86 (86.0)	150 (100.0)
Resectability			
RPC	79 (31.6)	NA	NA
BRPC-LAPC	104 (41.6)	NA	NA
MPC	67 (26.8)	NA	NA
Differentiation			
Low	31 (12.4)	NA	NA
Moderately	31 (12.4)	NA	NA
High	0 (0.0)	NA	NA
Unknown	188 (75.2)	NA	NA

Note: NA, not available. *, $P < 0.05$; **, $P < 0.01$; ***, $P < 0.001$ (compared to PDAC group).

Supplementary Table S7 Markers and cell subsets used for HCC detection model construction

Markers or cell subsets	Feature importance	SE	Z-score	P-value
AFP	0.353122325856825	0.454	-36.552	<0.001
CD14	0.0266157507901591	6.515	-13.932	<0.001
CD152	0.0165493598488722	1.751	8.584	<0.001
CD25	0.0268740558987101	0.864	-5.537	<0.001
CD33	0.0307218964267744	8.573	-11.071	<0.001
CD45RA	0.0243438245610579	12.255	9.352	<0.001
CD85J	0.0320794521882959	6.593	-9.068	<0.001
CD86	0.0462854483540234	5.865	-15.543	<0.001
CD33 ⁻ CD14 ⁻ CD3 ⁺ CD4 ⁺ HLA-DR ⁻ CD38 ⁻	0.0437688704892163	12.243	14.821	<0.001
CD33 ⁻ CD14 ⁻ CD3 ⁻ CD19 ⁺ IgD ⁺ CD27 ⁺	0.0444513473213629	5.56	-7.758	<0.001
CD33 ⁻ CD14 ⁻ CD3 ⁺ CD4 ⁺ CD197 ⁺ CD45RA ⁺	0.026710817192894	11.142	12.027	<0.001
CD3 ⁻ CD19 ⁻ HLA-DR ⁻	0.0196247275687274	12.876	-9.79	<0.001
CD3 ⁻ CD19 ⁻ CD14 ⁺	0.0221718539244221	8.508	11.146	<0.001
CD33 ⁻ CD14 ⁻ CD3 ⁺ CD38 ⁺ HLA- DR ⁺ CD8a ⁺	0.0141180611540897	3.008	7.652	<0.001
CD33 ⁻ CD14 ⁻	0.0225940563969961	8.508	-11.146	<0.001
CD33 ⁻ CD14 ⁻ CD3 ⁺ CD8a ⁺ CD85j ⁻	0.0193691230085965	5.108	6.13	<0.001
CD33 ⁻ CD14 ⁻ CD3 ⁺ CD8a ⁺ CXCR5 ⁺	0.0274583522068538	2.222	6.06	<0.001
CD33 ⁻ CD14 ⁻ CD3 ⁺ CD38 ⁺ HLA-DR ⁻ CD4 ⁺	0.044259520077781	12.346	-15.714	<0.001
CD33 ⁻ CD14 ⁻ CD3 ⁺ CD8a ⁺	0.0216413407150223	9.844	-8.875	<0.001
CD33 ⁻ CD14 ⁻ CD3 ⁺ CD4 ⁺ CD45RA ⁺ CD197 ⁻	0.0307140730725735	2.371	-5.588	<0.001

CD33 ⁻ CD14 ⁻ CD3 ⁺ CD45RA ⁻ CD197 ⁺ CD8a ⁺	0.0254454238922522	3.114	9.14	<0.001
CD33 ⁺ CD3 ⁻ CD19 ⁻ HLA-DR ⁻ CD11b ⁺	0.0401007387170425	10.059	11.259	<0.001
CD3 ⁻ CD19 ⁻ CD14 ⁺ CD16 ⁺	0.0255826514290803	6.768	3.488	<0.001
CD33 ⁻ CD14 ⁻ CD3 ⁺ CD4 ⁺	0.0153969289083717	11.627	8.775	<0.001

Supplementary Table S8 Markers and cell subsets used for PDAC detection model construction

Markers or cell subsets	Feature importance	SE	Z-score	P-value
CA19-9	0.447075072880982	0.496	-33.442	<0.001
CD86	0.0251255615948677	6.784	-12.562	<0.001
CD14	0.0314453971496788	7.04	-12.226	<0.001
CD33	0.04899000925121	9.15	-10.64	<0.001
CD4	0.0200205290640094	10.237	-3.816	<0.001
CD11b	0.0126628230877706	14.403	-4.4	<0.001
CD183	0.0100134741809992	8.382	8.895	<0.001
CD25	0.0447355631765113	0.86	-3.794	<0.001
CD152	0.017225333770737	1.331	5.815	<0.001
CD33 ⁻ CD14 ⁻ CD3 ⁺ CD4 ⁺	0.0199715291594582	11.571	9.064	<0.001
CD33 ⁻ CD14 ⁻ CD3 ⁺ CD38 ⁺ HLA-DR ⁺ CD8a ⁺	0.0459849642348083	5.01	9.34	<0.001
CD33 ⁻ CD14 ⁻	0.0451007438245495	9.129	-10.805	<0.001
CD33 ⁻ CD14 ⁻ CD3 ⁺ CD85j ⁺ CD8a ⁺	0.0309372394802058	4.554	-6.084	<0.001
CD3 ⁻ CD19 ⁻ CD14 ⁺	0.0422505171663183	9.129	10.805	<0.001
CD33 ⁻ CD14 ⁻ CD3 ⁺ CD8a ⁺ HLA-DR ⁺	0.018914250326465	6.461	8.945	<0.001
CD33 ⁻ CD14 ⁻ CD3 ⁺ CD8a ⁺	0.0172440965501883	9.791	-7.722	<0.001
CD33 ⁻ CD14 ⁻ CD3 ⁺ CD4 ⁺ HLA-DR ⁺ CD38 ⁺	0.0561160245457125	1.142	9.476	<0.001
CD33 ⁻ CD14 ⁻				
CD3 ⁺ CD4 ⁺ CD25 ⁺ CD45RA ⁺ CD161 ⁻ CD127 ⁻	0.0130382951243638	7.939	-5.697	<0.001
CD33 ⁺ CD3 ⁻ CD19 ⁻ HLA-DR ⁻ CD11b ⁺	0.0326018440406268	11.173	7.482	<0.001
CD3 ⁻ CD19 ⁻ HLA-DR ⁻	0.0205467313905376	13.054	-9.008	<0.001

Supplementary Table S9. Differences in key cell subsets of HCC with certain clinicopathological parameters

	Cell subsets	AFP		Differentiation Degree		HBV		MVI		BCLC stage	
		t-value	P-value	t-value	P-value	t-value	P-value	t-value	P-value	t-value	P-value
subset1	CD33-CD14-CD3+CD4+HLA_DR-CD38-	1.376	0.169	5.311	0.07	0.329	0.742	1.553	0.46	2.579	0.461
subset2	CD33-CD14-CD3-CD19+IGD+CD27+	-0.411	0.681	0.963	0.618	1.343	0.179	1.331	0.514	6.882	0.076
subset3	CD33-CD14-CD3+CD4+CD197+CD45RA+	0.435	0.663	3.252	0.197	0.133	0.894	0.108	0.947	3.615	0.306
subset4	CD3-CD19-HLA_DR-	0.333	0.739	0.346	0.841	-0.277	0.782	1.235	0.539	7.752	0.051
subset5	CD3-CD19-CD14+	-1.634	0.102	1.916	0.384	2.384	0.017	0.075	0.963	32.23	<0.001
subset6	CD33-CD14-CD3+CD38+HLA_DR+CD8a+	-0.555	0.579	4.416	0.11	2.438	0.015	0.1	0.951	17.525	<0.001
subset7	CD33-CD14-	1.634	0.102	1.916	0.384	-2.384	0.017	0.075	0.963	32.23	<0.001
subset8	CD33-CD14-CD3+CD8a+CD85j-	1.798	0.072	0.848	0.655	1.398	0.162	0.605	0.739	33.67	<0.001
subset9	CD33-CD14-CD3+CD8a+CXCR5+PD_L1+	-0.264	0.792	0.135	0.935	0.758	0.449	3.379	0.185	9.501	0.023
subset10	CD33-CD14-CD3+CD38+HLA_DR-CD4+	-1.119	0.263	4.039	0.133	-0.688	0.491	1.01	0.603	1.897	0.594
subset11	CD33-CD14-CD3+CD8a+	-0.538	0.591	0.13	0.937	0.755	0.45	3.337	0.189	1.645	0.649
subset12	CD33-CD14-CD3+CD4+CD45RA+CD197-	0.175	0.861	1.348	0.51	-0.166	0.868	0.642	0.725	3.081	0.379
subset13	CD33-CD14-CD3+CD45RA-CD197+CD8a+	-2.383	0.017	6.226	0.044	-0.579	0.563	0.786	0.675	8.024	0.046
subset14	CD33+CD3-CD19-HLA_DR-CD11b+	-0.534	0.594	0.613	0.736	-0.255	0.799	0.005	0.997	21.181	<0.001
subset15	CD3-CD19-CD14+CD16+	-2.788	0.005	0.116	0.944	-0.639	0.523	0.048	0.976	1.368	0.713
subset16	CD33-CD14-CD3+CD4+	0.39	0.697	0.248	0.883	1.473	0.141	1.38	0.502	0.754	0.861

Negative as control

Poorly differentiation control

Negative as control

M0 as control

Stage 0 as control

Supplementary Table S10. Differences in key cell subsets of PDAC with certain clinicopathological parameters

Cell subsets	CA199		Diabetes		Differentiation degree		Tumor location		Disease stage		
	t-value	P-value	t-value	P-value	t-value	P-value	t-value	P-value	t-value	P-value	
subset1	CD33-CD14-CD3+CD4+	-0.935	0.35	-0.621	0.535	-0.412	0.681	-1.461	0.144	1.026	0.309
subset2	CD33-CD14-CD3+CD38+HLA_DR+CD8+	0.17	0.865	-1.069	0.276	0.938	0.37	2.919	0.003	1.05	0.292
subset3	CD33-CD14-	-0.105	0.916	-1.268	0.205	-1.551	0.121	-1.128	0.259	18.941	<0.001
subset4	CD33-CD14-CD3+CD85+CD8+	-0.436	0.663	-1.112	0.266	-0.57	0.569	-1.33	0.183	0.183	0.912
subset5	CD3-CD19-CD14+	0.105	0.916	1.268	0.205	1.551	0.121	1.128	0.259	18.941	<0.001
subset6	CD33-CD14-CD3+CD8+HLA_DR+	0.139	0.889	-1.555	0.12	0.663	0.507	2.627	0.009	1.126	0.257
subset7	CD33-CD14-CD3+CD8+	0.898	0.369	-0.306	0.759	0.357	0.721	1.874	0.061	0.761	0.444
subset8	CD33-CD14-CD3+CD4+HLA_DR+CD38+	-0.72	0.472	-0.063	0.946	0.657	0.511	2.101	0.035	6.973	0.008
subset9	CD33-CD14-CD3+CD4+CD25+CD45RA+CD161-CD127-	1.299	0.194	-1.29	0.2	-1.37	0.171	0.02	0.984	7.072	0.009
subset10	CD33+CD3-CD19-HLA_DR-CD11b+	0.632	0.527	1.555	0.125	0.595	0.552	1.626	0.104	7.121	0.008
subset11	CD3-CD19-HLA_DR-	-0.738	0.461	0.391	0.696	-0.909	0.363	-1.739	0.072	3.826	0.147

Negative as control Negative as control Poorly differentiation as control Pancreatic head/uncinate as control Resectable pancreatic cancer as control