Supplementary Table 1: Association between PD-L1 expression and patient characteristics (except EGFR mutation status) in the TMA cohort

PD-L1 Expression	IC and TC <1%	IC or TC >=1%	Total	P-value
Gender				
n	63(58.3%)	45(41.7%)	108	1.000
female	17(58.6%)	12(41.4%)	29	
male	46(58.2%)	33(41.8%)	79	
Tumor Histology				
n	63(58.3%)	45(41.7%)	108	0.685
Non-squamous	42(60%)	28(40%)	70	
Squamous	21(55.3%)	17(44.7%)	38	
Smoking Status				
n	59(59%)	41(41%)	100	0.288
Current	22(55%)	18(45%)	40	
Never	24(55.8%)	19(44.2%)	43	
Previous	13(76.5%)	4(23.5%)	17	
Tumor Stage				
n	63(58.3%)	45(41.7%)	108	0.397
1,2,3a	58(56.9%)	44(43.1%)	102	
3b,4	5(83.3%)	1(16.7%)	6	
Treatment Type				
n	63(58.3%)	45(41.7%)	108	1.000
Surgery only	28(58.3%)	20(41.7%)	48	
Surgery + others	35(58.3%)	25(41.7%)	60	
Differentiation Level				
n	56(60.2%)	37(39.8%)	93	0.257
Moderately differentiated	36(64.3%)	20(35.7%)	56	
Poorly differentiated	14(48.3%)	15(51.7%)	29	
Well differentiated	6(75%)	2(25%)	8	

Supplementary Table 2: Association between PD-L1 expression and patient characteristics (except EGFR mutation status) in the whole-section cohort

PD-L1 Expression	IC and TC <1%	IC or TC >=1%	Total	P-value
Gender				
n	63(60%)	42(40%)	105	0.001
female	33(80.5%)	8(19.5%)	41	
male	30(46.9%)	34(53.1%)	64	
Tumor Histology				
n	63(60%)	42(40%)	105	0.042
Non-squamous	51(66.2%)	26(33.8%)	77	
Squamous	12(42.9%)	16(57.1%)	28	
Smoking Status				
n	62(59.6%)	42(40.4%)	104	0.057
Current	16(45.7%)	19(54.3%)	35	
Never	45(66.2%)	23(33.8%)	68	
Previous	1(100%)	0(0%)	1	
Tumor Stage				
n	63(60%)	42(40%)	105	0.751
1,2,3a	57(60.6%)	37(39.4%)	94	
3b,4	6(54.5%)	5(45.5%)	11	
Treatment Type				
n	63(60%)	42(40%)	105	1
Surgery only	42(60%)	28(40%)	70	
Surgery + others	21(60%)	14(40%)	35	
Differentiation Level				
n	59(60.2%)	39(39.8%)	98	<0.001
Moderately differentiated	47(82.5%)	10(17.5%)	57	
Poorly differentiated	11(28.2%)	28(71.8%)	39	
Well differentiated	1(50%)	1(50%)	2	

Supplementary Table 3: Previous reports on the association between PD-L1 expression and various clinical characteristics

Clinical Characteristics	Reports
Age	
Younger higher*	Cooper et al.[40]
Older higher	Sun et al.[36]
Gender	
Female higher	Azuma et al.[41]
Male higher	Takada et al.[50], Sun et al.[36]
Tumor Histology	
Non-squamous higher	D'Incecco et al.[39], Azuma et al.[41]
Squamous higher	Cooper et al.[40], Sun et al.[36]
Smoking Status	
Smoker higher	D'Incecco et al.[39], Huynh et al.[45], Takada et al.[50], Sun et al.[36]
Non-smoker higher	Azuma et al.[41]
Tumor Stage	
1 or 2 higher	
3 or 4 higher	Sun et al.[36], Takada et al.[50], Zhang et al.[51]
Differentiation Level	
Poorly differentiated higher	Wang et al.[38], Pan et al.[37], Inamura et al.[46]
Moderately or well differentiated higher	
EGFR	
Mutant higher	Lin et al.[42], Tang et al.[44], D'Incecco et al.[39], Azuma et al.[41], Song et al.[43]
Wild-type higher	Huynh et al.[45], Inamura et al.[46], Takada et al.[50], Ji et al.[47]
Prognosis	
Favorable	Cooper et al.[40] (in early-stage patients), Tang et al.[44] (in EGFR mutant patients), D'Incecco et al.[39] (in EGFR mutant patients), Schmidt et al.[58] (in patients with squamous cell carcinoma, adjuvant therapy, increased tumor size and positive lymph node status), Ameratunga et al.[54] (for N2 patients), Yang et al.[60] (in patients with stage I squamous cell carcinoma), Toyokawa et al.[59], Miao et al.[57], Lin et al. (in EGFR mutant patients)[56], Ishii et al.[55]
Unfavorable	Tang et al.[44] (in EGFR wild-type patients), Azuma et al.[41], Wang et al.[38], Sun et al.[36], Pan et al.[37], Huynh et al.[45], Koh et al.[48], Inamura et al.[46], Takada et al.[50], Ji et al.[47], Meniawy et al.[49], Zhou et al.[52], Zhang et al.[51]

*: "Younger higher" means "The previous study reported that younger patients showed higher PD-L1 expression". Similar meaning applies to the description on the association between the other clinical characteristics and PD-L1 expression in this table.

Supplementary Table 4: The effect of PD-L1 level on OS in different patient sub-groups of the PTEN-qualified TMA samples divided according to various clinical parameters

Risk factor	Total n	PD-L1 Low n	PD-L1 Low Events	PD-L1 High n	PD-L1 High Events	Hazard Ratio	(95% CI)
All samples	108	63	36	45	18	0.58	(0.33 - 1.02)
Tumor Histology							
Non-squamous	70	42	26	28	11	0.53	(0.26 - 1.07)
Squamous	38	21	10	17	7	0.68	(0.26 - 1.80)
Treatment Type							
other(neo/adj chemo)	60	35	20	25	8	0.47	(0.21 - 1.06)
surgery only	48	28	16	20	10	0.73	(0.33 - 1.60)
EGFR status							
Mutation	16	13	7	3	1	0.37	(0.04 - 3.13)
Unknown	42	22	10	20	5	0.48	(0.16 - 1.39)
Wildtype	50	28	19	22	12	0.62	(0.30 - 1.28)
Sex							
female	29	17	10	12	5	0.64	(0.22 - 1.90)
male	79	46	26	33	13	0.57	(0.29 - 1.10)
Smoking Status							
Current	40	22	16	18	8	0.39	(0.17 - 0.92)
Never	43	24	11	19	7	0.78	(0.30 - 2.01)
Previous	17	13	6	4	2	0.84	(0.17 - 4.14)
Tumor Stage							
1,2,3a	102	58	31	44	17	0.61	(0.34 - 1.10)
3b,4	6	5	5	1	1	1.93	(0.17 - 21.69)
Differentiation Level							
Moderately differentiated	56	36	18	20	8	0.73	(0.32 - 1.69)
Poorly differentiated	29	14	10	15	7	0.41	(0.16 - 1.10)
Well differentiated	8	6	3	2	1	0.63	(0.06 - 6.31)

PD-L1 High better ← | → PD-L1 Low better

0.1 0.4 1 2.7 7.4 20