

Supplementary Table 1: Genomic HLA-I and -II status in the full and PDL1 known cohorts.

	Full cohort	PDL1 known group
	N (%)	N (%)
Genomic HLA-I		
Homozygous at one or more loci	32 (20)	21 (18)
Heterozygous at all loci	129 (80)	93 (82)
Genomic HLA-II		
Homozygous at one or more loci	56 (35)	38 (33)
Heterozygous at all loci	105 (65)	76 (67)
Total	161	114

HLA: Human Leukocyte Antigen

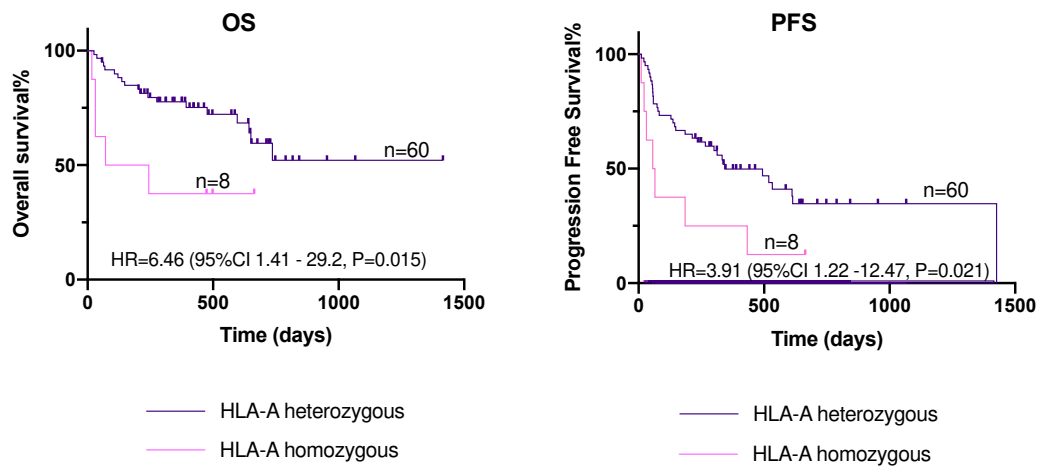
Supplementary Table 2: Clinical characteristics of patients by HLA genotype

Variable	HLA-I			P-value	HLA-II			P-value
	Homozygous N=32 (%)	Heterozygous N=129 (%)	Total N=161 (%)		Homozygous N= 56 (%)	Heterozygous N= 105 (%)	Total N= 161 (%)	
Age								
<65	13 (41)	56 (43)	69 (57)	0.843	19 (34)	50 (48)	69 (57)	0.095
≥65	19 (59)	73 (57)	92 (57)		37 (66)	55 (52)	92 (57)	
Sex								
Female	10 (31)	61 (47)	71 (44)	0.115	22 (39)	49 (47)	71 (44)	0.369
Male	22 (69)	68 (53)	90 (56)		34 (61)	56 (53)	90 (56)	
Smoking								
Yes	29 (91)	102 (79)	131 (81)	0.322	45 (80)	86 (82)	131 (81)	0.831
No	2 (6)	17 (13)	19 (12)		7 (13)	12 (11)	19 (12)	
Unk	1 (3)	10 (8)	11 (7)		4 (7)	7 (7)	11 (7)	
ECOG								
≤1	26 (81)	110 (85)	136 (84)	0.441	51 (91)	85 (81)	136 (84)	0.143
>1	6 (19)	17 (13)	23 (14)		5 (9)	18 (17)	23 (14)	
Unk	0	2 (2)	2 (1)		2 (2)	2 (1)	2 (1)	
Histopathology								
Adeno	23 (72)	83 (64)	106 (66)	0.815	40 (71)	66 (63)	106 (66)	0.114
SCC	9 (28)	36 (28)	45 (28)		11 (20)	34 (32)	45 (28)	
Other	0	10 (8)	10 (6)		5 (9)	5 (5)	10 (6)	
NLR								
≥5	14 (44)	47 (36)	61 (38)	0.464	21 (38)	40 (38)	61 (38)	0.905
<5	18 (56)	81 (63)	99 (61)		35 (62)	64 (61)	99 (61)	
Unk	0	1 (1)	1 (1)		0	1 (1)	1 (1)	
PDL1 status								
≥50%	9 (28)	52 (40)	61 (38)	0.278	17 (30.5)	44 (42)	61 (38)	0.126
<50%	12 (38)	41 (32)	53 (33)		22 (39)	31 (30)	53 (33)	
Unk	11 (34)	36 (28)	47 (29)		17 (30.5)	30 (28)	47 (29)	
Treatment modality								
Anti-PD1 (Nivo/Pembro)	21 (66)	88 (68)	109 (68)	0.779	42 (75)	67 (64)	109 (68)	0.148
Anti-PDL1 (Atezo)	11 (34)	41 (32)	52 (32)		14 (25)	38 (36)	52 (32)	
Treatment line								
1 st line	8 (25)	29 (23)	37 (23)	0.762	13 (23)	24 (23)	37 (23)	0.959
2 nd line	24 (75)	100 (77)	124 (77)		43 (77)	81 (77)	124 (77)	
KRAS mutant*								
Mutant	13 (57)	42 (45)	55 (47)	0.974	22 (49)	33 (46)	55 (47)	0.217
Wild-type	11 (48)	35 (38)	46 (40)		13 (29)	33 (46)	46 (40)	
Unk	3 (13)	7 (7)	10 (9)		4 (15)	6 (8)	10 (9)	

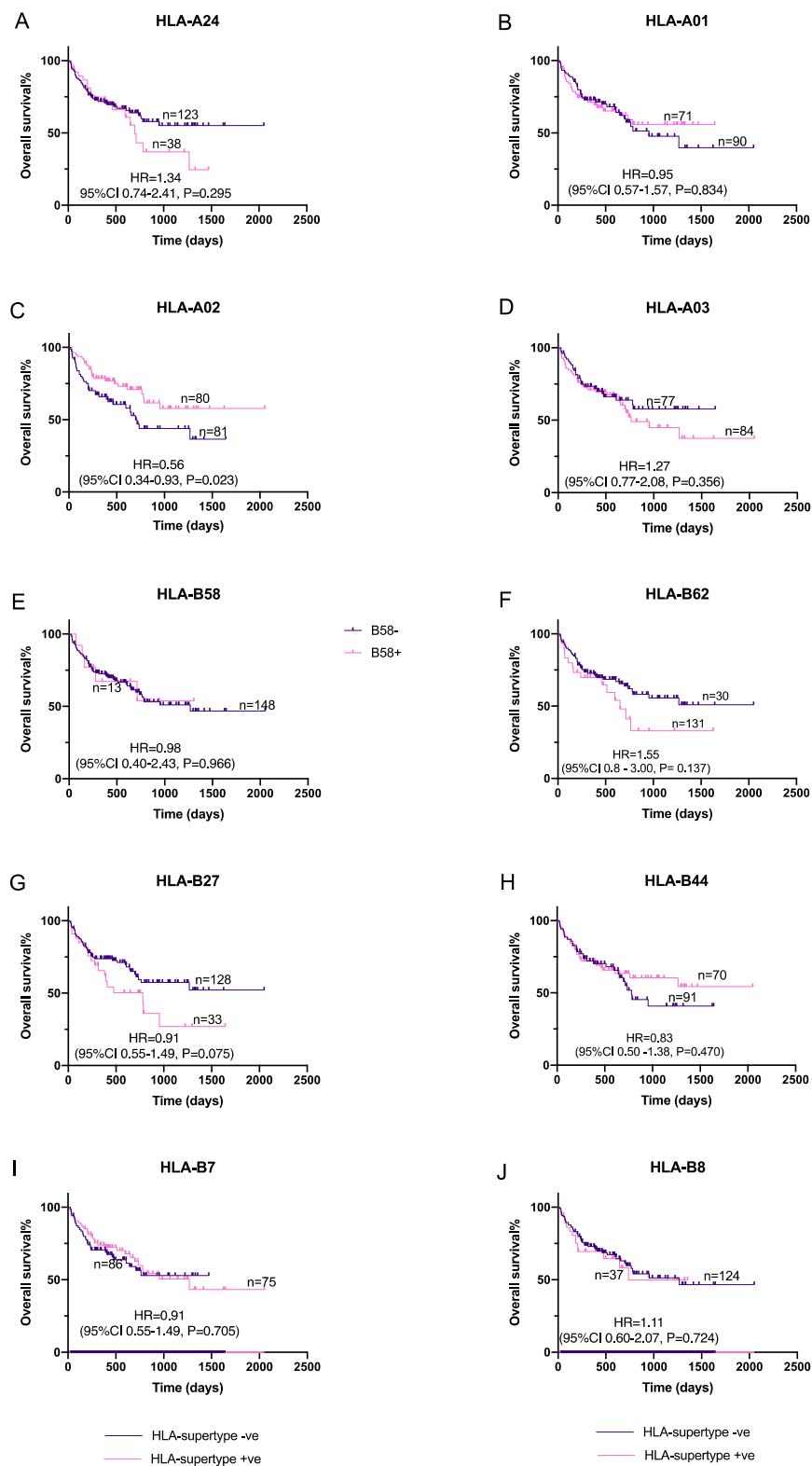
Unk – unknown, P-value of Chi-squared test, *KRAS mutation only examined in non-SCC NSCLC (5 patients with targetable mutation were excluded from the table), Nivo: nivolumab, Pembro: Pembrolizumab.

Supplementary Table 3: Univariable and multivariable Cox regression analysis for HLA-A02 (N=114)

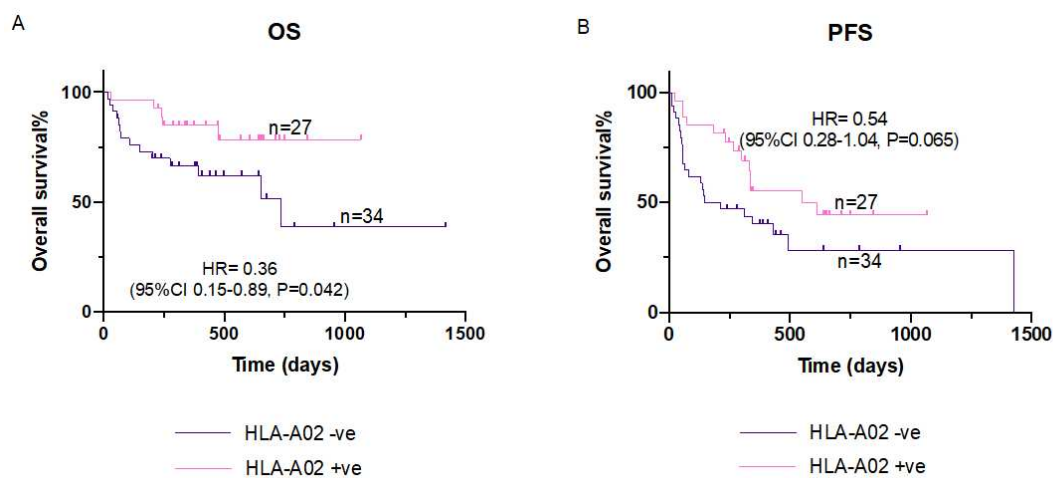
OS	Univariate				Multivariate			
	p-value	HR	95.0% CI		p-value	HR	95.0% CI	
			Lower	Upper			Lower	Upper
HLA-A02 (positive vs negative)	0.025	0.56	0.34	0.93	0.242	0.67	0.34	1.31
Zygoty (hetero vs homo)	0.020	2.17	1.13	4.17	0.046	2.01	1.01	4.00
Age (<65 vs ≥65)	0.534	0.83	0.45	1.51	0.301	0.70	0.36	1.38
Sex (M vs F)	0.598	1.14	0.69	1.88	0.191	1.53	0.81	2.91
PDL1 (≥50% vs <50%)	0.916	0.97	0.53	1.77	0.366	0.74	0.39	1.41
ECOG (≤1 vs ≥2)	0.216	1.63	0.72	3.51	0.201	1.69	0.76	3.76
NLR (≤5 vs >5)	0.059	1.78	0.98	3.24	0.001	2.97	1.53	5.76
Therapy type (αPD1 vs αPDL1)	<0.001	3.16	1.66	5.99	0.000	4.10	2.02	8.30



Supplementary Figure 1: Effect of HLA-A homozygosity on overall and progression-free survival in NSCLC patients with PDL1 $\geq 50\%$ (N=68) treated with anti-PD1/PDL1 immunotherapy.



Supplementary Figure 2: Effect of HLA-A and HLA-B supertypes on overall survival in NSCLC patients treated with anti-PD1/PDL1 immunotherapy.



Supplementary Figure 3: Effect of the presence of HLA-A02 on OS(A) and PFS(B) in NSCLC patients treated with anti-PD1/PDL1 immunotherapy with PDL1 expression $\geq 50\%$.