

Supplementary Data Table S1. Characteristics of patients in the real-world clinico-genomic cohort.

Characteristic		HLA-I Intact ^a (n=180)	HLA-I LOH ^a (n=60)	P Value ^b
Median age at the start of second line ICI therapy, (IQR)		68 (60-74)	68 (61-72)	0.89
Gender	Male	74 (41%)	25 (42%)	1.00
	Female	106 (59%)	35 (58%)	
Smoking status	History of smoking	154 (86%)	56 (93%)	0.17
	No history of smoking	26 (14%)	4 (7%)	
Race/Ethnicity (n=222/240)	Asian	*	*	0.57
	Black or African American	14 (8%)	5 (9%)	1.00
	Other	19 (12%)	10 (18%)	0.25
	White	129 (78%)	41 (73%)	0.58
Stage of disease at initial diagnosis (n=237/240)	I	16 (9%)	5 (8%)	1.00
	II	9 (5%)	0 (0%)	0.12
	III	31 (17%)	11 (19%)	0.84
	IV	122 (69%)	43 (73%)	0.62
First line therapy received	Anti-VEGF and chemotherapy combinations	61 (34%)	29 (48%)	0.06
	Clinical study drugs	5 (3%)	1 (2%)	1.00
	EGFR tyrosine kinase inhibitors	*	*	1.00
	Platinum based chemotherapy combinations	103 (57%)	27 (45%)	0.1
	Single agent chemotherapy	8 (4%)	2 (3%)	1.00
Timing of tumor biopsy	Before 2 nd line ICI	163 (91%)	56 (93%)	0.61
	After 2 nd line ICI	17 (9%)	4 (7%)	
Tumor mutational burden	≥10 mut/Mb	82 (46%)	31 (52%)	0.46
	<10 mut/Mb	98 (54%)	29 (48%)	

^aSample counts that fall below the reportable threshold (< 5 patients) and are masked by * for identifiability concerns.

^bStatistics conducted by Fisher's Exact. Age comparison conducted by Wilcoxon Rank Sum Test.