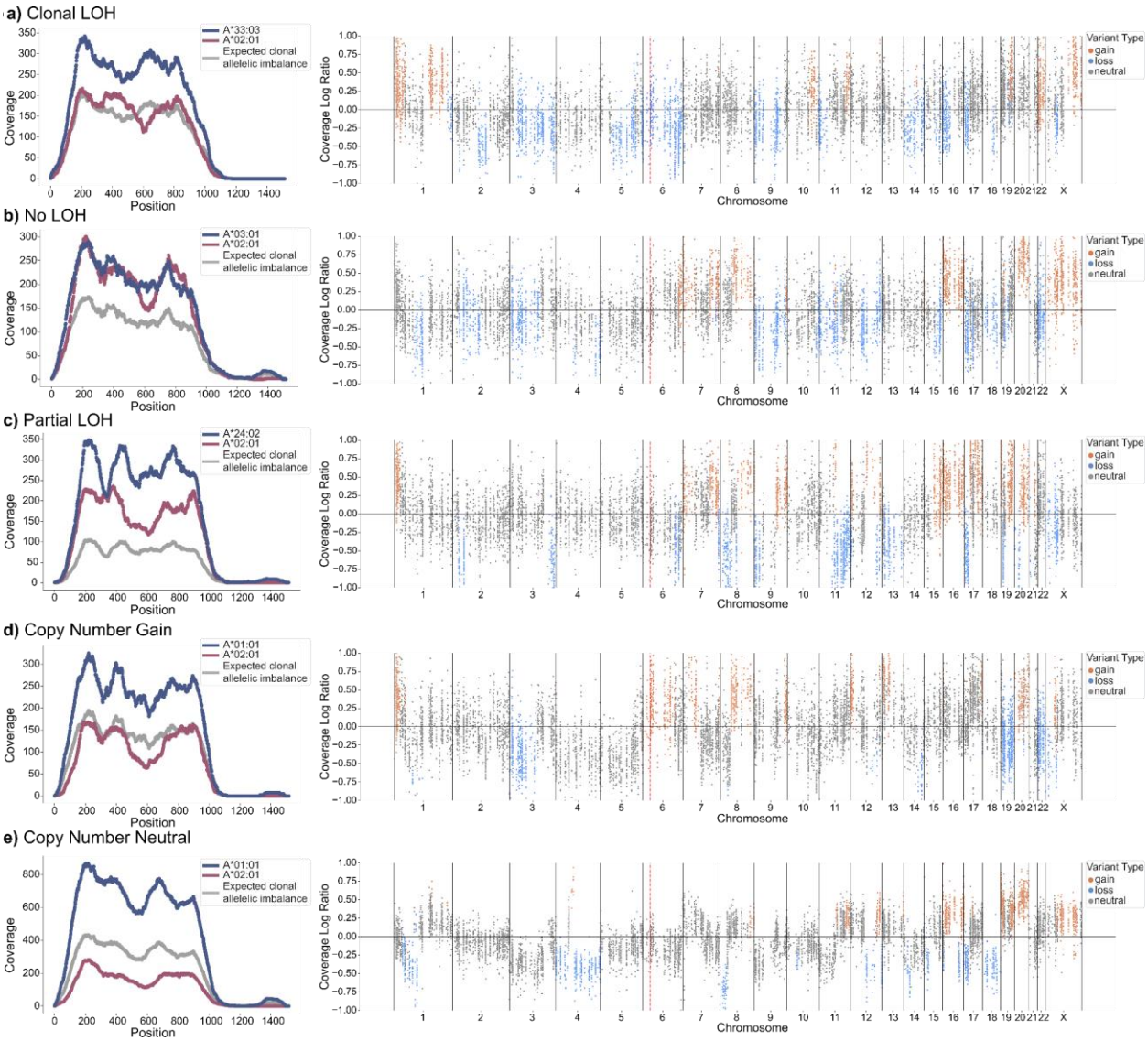
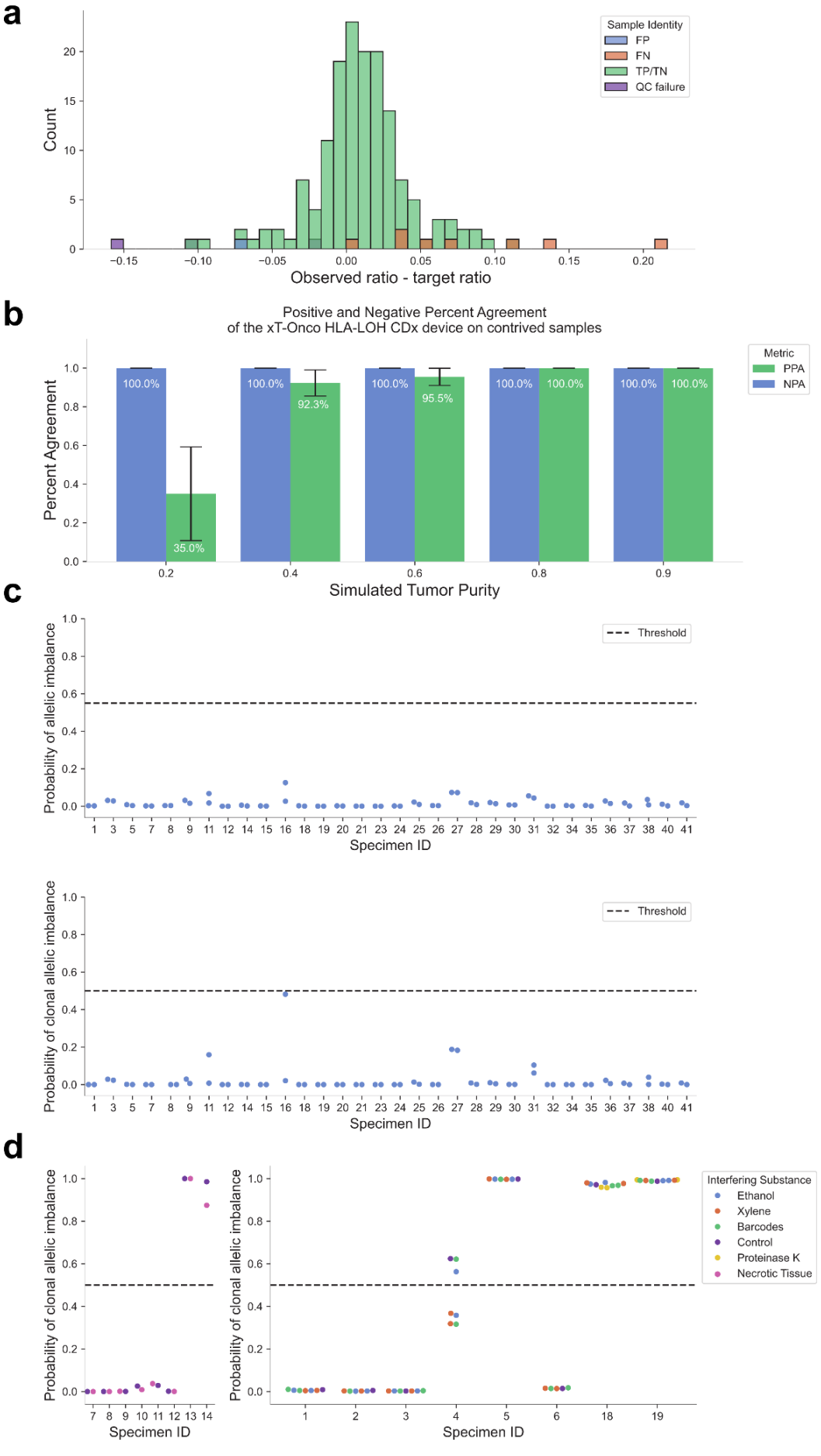


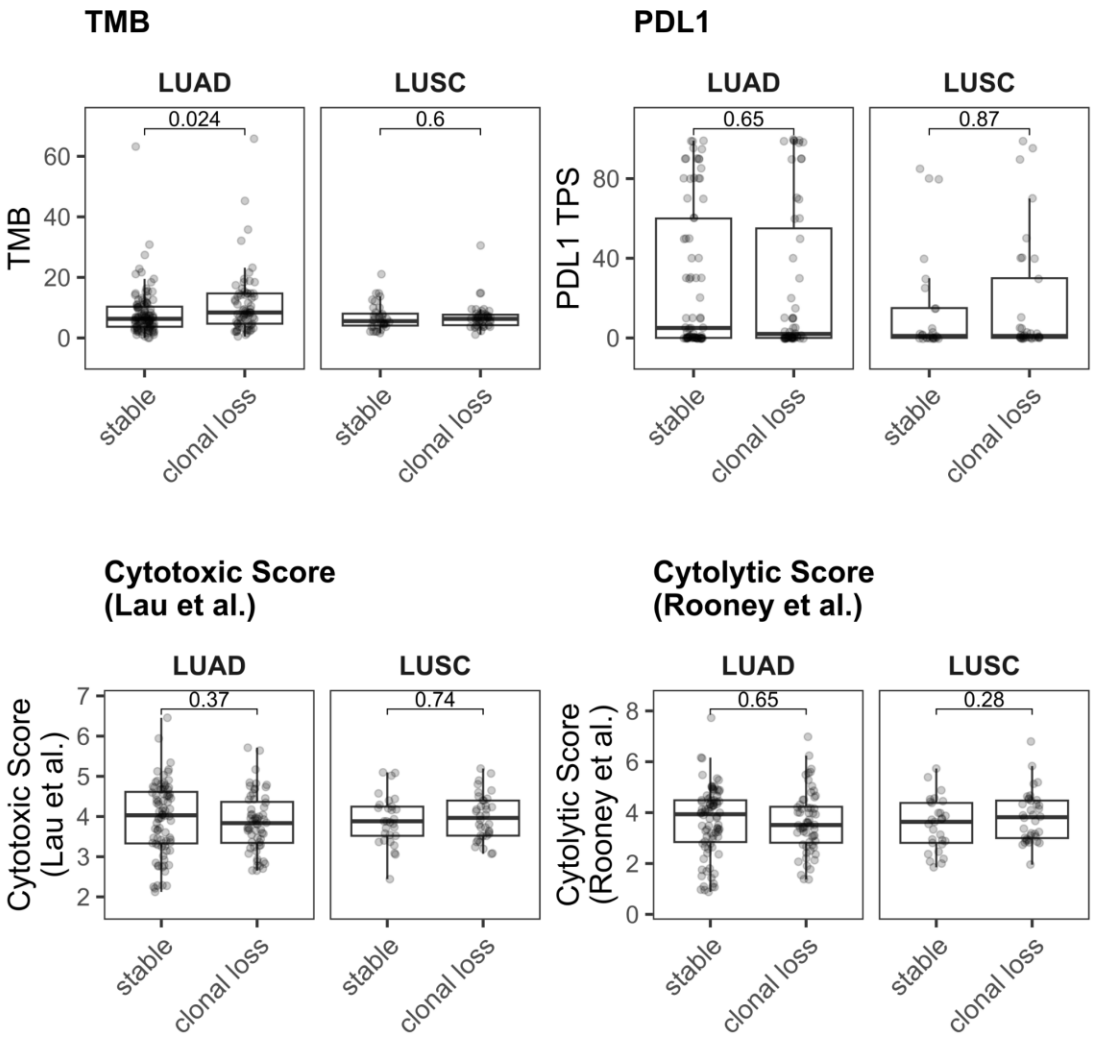
Supplementary Figure 1 - Examples of four distinct allelic imbalance cases that can be detected by the test

(a, b, c, d, e) HLA-A allele-specific read coverage plot across exon 2 to exon 3 in tumor samples with clonal LOH, no LOH, partial LOH, copy number gain, and copy number neutral, respectively (left panel). The right panel displays log ratios of tumor coverage to normal coverage for variants across the genome in tumor samples with clonal LOH, no LOH, partial LOH, copy number gain, and copy number neutral, respectively. Red dashed line denotes the position of the HLA gene.


a
Sample Identity
FP
FN
TP/TN
QC failure
Count
Observed ratio - target ratio
b
Positive and Negative Percent Agreement
of the xT-Onco HLA-LOH CDx device on contrived samples
Metric
PPA
NPA
Percent Agreement
100.0%
35.0%
92.3%
95.5%
Simulated Tumor Purity
c
Threshold
Probability of allelic imbalance
Specimen ID
Probability of clonal allelic imbalance
d
Interfering Substance
Ethanol
Xylene
Barcodes
Control
Proteinase K
Necrotic Tissue

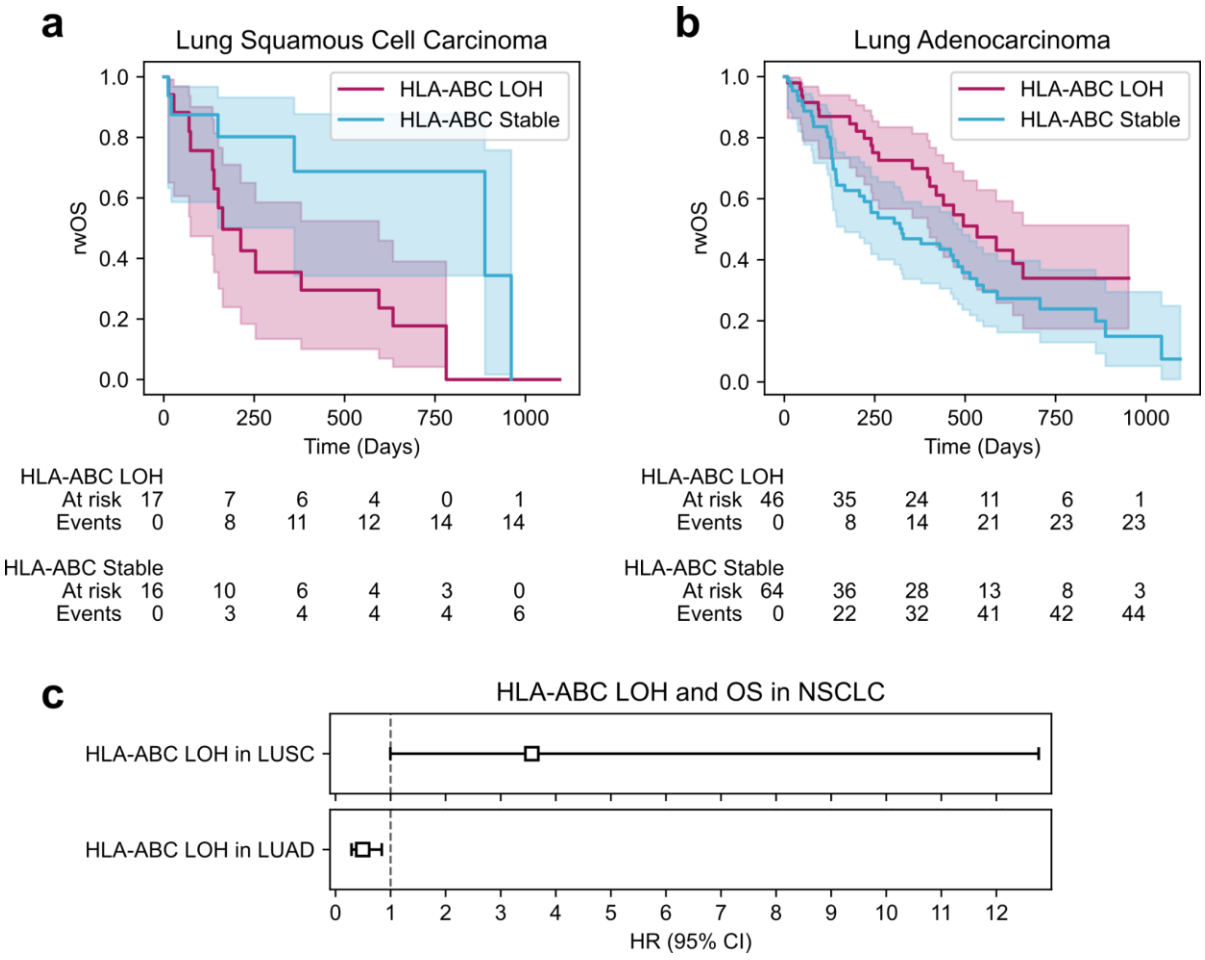
Supplementary Figure 2 - Other studies in HLA LOH validation

(a) Distribution of the difference between the observed cell line mixture ratio, predicted by contrived sample QC, and target mixture ratio. A positive value indicates the proportion of the HLA-A*02:01 cell line in the admixture exceeded the target amount. The sample identities are denoted by color (FP, false positive; FN, false negative; TP/TN, true positive or true negative; QC failure: samples failed the contrived sample QC applied in the accuracy study). The single false positive and 2 false negatives are clearly borderline in the distribution, suggesting those misclassifications could be due to incorrect sample contrivance. If we exclude the samples whose observed mixture ratio deviated from the target by more than 5%, our device would exhibit improved positive predictive agreement (PPA) and negative predictive agreement (NPA) of 97% and 100% respectively. **(b)** Performance of HLA-LOH test on contrived samples that passed the contrived sample QC. Samples that passed this QC have an observed ratio within 5% of the target ratio. **(c, d)** Swarm plot showing the results of the limit of blank and interference studies, respectively. The dashed line denotes the threshold for detecting clonal allelic imbalance.



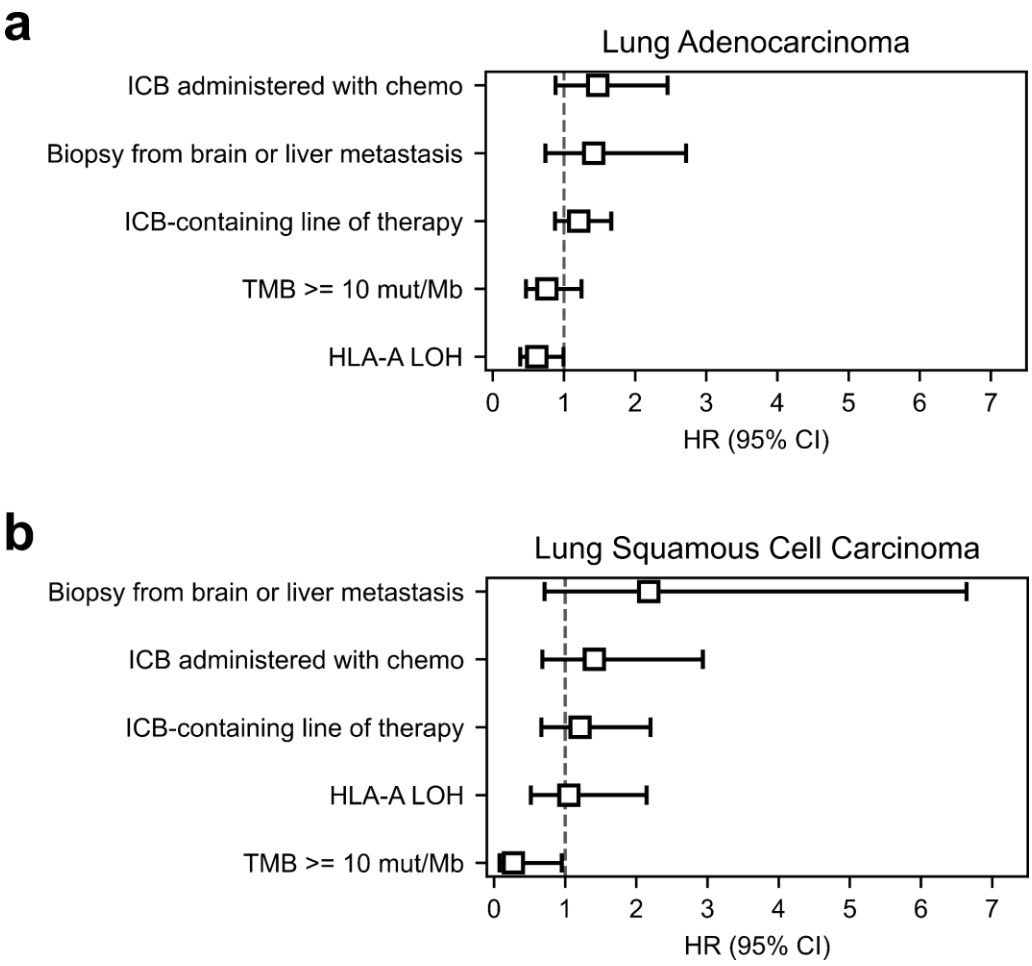
Supplementary Figure 3 - Comparing features of the tumor microenvironment by NSCLC histology and HLA LOH

Plots represent comparisons between immune features in patients with stable HLA loci or clonal LOH, in each of the LUAD and LUSC cohorts. Analysis of PD-L1 IHC tumor proportion score (TPS) was performed in 187 patients who had such values available. T-cell cytotoxicity and cytolytic activity scores were generated for 209 patients with RNAseq data available using two gene signatures described previously (Lau et al., 2022, Rooney et al., 2015). The lower and upper hinge of each boxplot indicate the first and third quartiles, respectively, with whiskers representing 1.5 times the difference between the first and third quartiles. Numbers above each bracket indicate the p-value of a two-group Wilcoxon rank sum test. There is a significant difference in TMB between HLA stable and HLA LOH subgroups in LUAD.

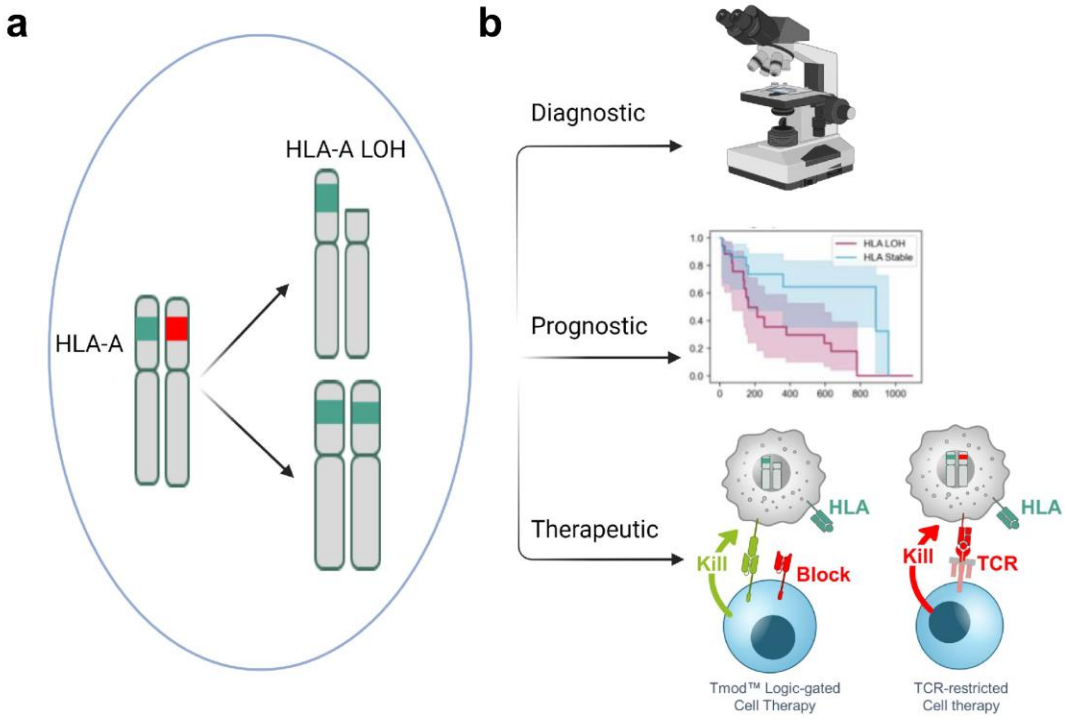


Supplementary Figure 4 - Consensus HLA-ABC LOH called across class I HLA loci is associated with differential rwOS following ICB therapy in lung cancer

Kaplan-Meier analysis of rwOS for LUSC **(a)** and LUAD **(b)** patients with clonal HLA LOH at all three class I HLA loci (HLA-ABC LOH) or stable HLA calls at all three class I loci (HLA-ABC stable). Median rwOS for LUSC HLA-ABC LOH patients was 163 days (95% CI [74, 595]), and median rwOS for LUSC HLA-ABC stable patients was 888 days (95% CI [361, 961]). In LUAD, median rwOS for HLA-ABC LOH patients was 533 days (95% CI [402, Inf]), whereas median survival for HLA-ABC stable patients was 325 days (95% CI [167, 492]). **(c)** Forest plot of univariable CoxPH models testing for associations between rwOS and HLA-ABC LOH within each of the LUSC and LUAD cohorts, stratified on treatment regimen type (ICB mono-therapy or ICB + chemotherapy) and line of therapy (1, 2, or 3). In LUSC, patients with HLA-ABC LOH tended to have shorter rwOS (HR = 3.56, 95% CI [1.00, 12.77], p = 0.051), whereas in LUAD, HLA-ABC LOH is associated with longer rwOS (HR = 0.49, 95% CI [0.29, 0.84], p = 0.009).



Supplementary Figure 5 - Multivariable rwOS CoxPH models in lung adenocarcinoma and squamous cell carcinoma Forest plots represent two multivariable Cox proportional hazards models for **(a)** lung adenocarcinoma **(b)** lung squamous cell carcinoma. Models include terms indicating whether a sample was collected from a brain or liver metastasis biopsy, whether the ICB-containing regimen was administered jointly with chemotherapy, which line of therapy contained the ICB regimen, whether the sample had clonal LOH identified at the HLA-A locus, and whether the sample had a TMB of greater than or equal to 10 mut/Mb. Hazard ratios, confidence intervals, and p values for all model terms are shown in table S4.



Supplementary Figure 6 - Summary of HLA LOH relevance for diagnostic, prognostic, and therapeutic opportunities. (a) Loss of heterozygosity may occur when one allele is deleted (either paternal or maternal) or through a copy-neutral event during mitotic recombination between homologous chromosomes. **(b)** HLA LOH may be relevant for the diagnosis of clonal events or relapse of previously observed clones. HLA LOH is associated with prognostic relevance and therapeutic opportunity. Tumors with HLA LOH may be targeted with an activator paired with a blocking logic gate, which protects normal cells from killing, whereas TCR-based strategies require the absence of HLA LOH and the persistent expression of the relevant allele.

Variable[1]	HLA-A LOH (n=112)	HLA-A Stable (n=144)	p-value
Tumor Purity	59 (50, 70)	54 (46, 65)	0.058
Treatment Class			>0.9
ICB	32 (29%)	42 (29%)	
ICB+chemo	80 (71%)	102 (71%)	
Ethnicity			0.7
Caucasian	77 (69%)	99 (69%)	
Black or African American	10 (8.9%)	11 (7.6%)	
Asian	1 (0.9%)	3 (2.1%)	
Others	1 (0.9%)	5 (3.5%)	
Unknown	23 (21%)	26 (18%)	
Age	67 (62, 75)	67 (61, 73)	0.2
Female sex	44 (39%)	63 (44%)	0.5
Smoking History	103 (92%)	131 (91%)	0.8
Histology			0.021
lung adenocarcinoma	69 (62%)	108 (75%)	
lung squamous cell carcinoma	43 (38%)	36 (25%)	

Supplementary Table 1 - Demographic and clinical details for patient samples used in rwOS analyses. Samples are separated into HLA-A LOH and HLA stable groups. Continuous variables are displayed as medians with the interquartile range in parentheses. Categorical variables are displayed as counts with the percentage of the subgroup in parentheses. P-values represent the results of the Wilcoxon rank sum test between subgroups for continuous variables and Chi-squared tests for categorical variables.

[1] The clinical and demographic variables of ethnicity, age, sex, and smoking history were abstracted from patient records.

Line of Therapy	HLA-A LOH	HLA-A Stable	p-value
1	67 (48%)	72 (52%)	0.12
2	38 (40%)	56 (60%)	0.4
3	7 (30%)	16 (70%)	0.2

Supplementary Table 2 - ICB line of therapy of patients in rwOS analyses. ‘Line of Therapy’ indicates the earliest recorded patient line of therapy that included ICB treatment. HLA-A LOH and HLA Stable indicate the number and percentage of samples with the indicated ICB line of therapy in each subcohort, and p-values represent the result of a Chi-squared test between sub-cohorts.

		Frequency				
Super allele	Highest frequency in any population	AFA	API	CAU	HIS	NAM
A*02:01	27.2%	12.2%	8.4%	27.2%	21.0%	26.5%
A*11:01	17.6%	1.4%	17.6%	5.9%	4.6%	5.1%
A*24:02	17.3%	2.5%	17.3%	8.9%	12.3%	12.9%
A*01:01	15.9%	4.7%	7.1%	15.9%	7.3%	11.8%
A*03:01	14.0%	8.3%	3.4%	14.0%	8.0%	10.2%
A*23:01	10.9%	10.9%	0.4%	2.1%	3.4%	1.9%
A*33:03	10.1%	5.2%	10.1%	0.4%	0.8%	0.9%
A*30:01	6.8%	6.8%	1.9%	1.4%	2.0%	1.2%
A*31:01	6.8%	1.0%	3.1%	2.5%	4.6%	6.8%
A*30:02	6.7%	6.7%	0.1%	0.8%	2.6%	1.2%
A*68:02	6.1%	6.1%	0.0%	0.8%	2.5%	0.9%
A*74:01	5.5%	5.5%	0.1%	0.0%	0.7%	0.3%
A*68:01	4.8%	3.9%	2.9%	3.3%	4.8%	4.0%
A*29:02	4.4%	3.2%	0.2%	3.1%	4.4%	2.8%
A*02:02	4.2%	4.2%	0.0%	0.1%	0.8%	0.2%
A*32:01	3.6%	1.5%	1.8%	3.6%	2.7%	2.6%
A*02:06	3.6%	0.1%	3.6%	0.2%	3.3%	2.8%
A*26:01	3.5%	1.4%	3.5%	3.4%	2.8%	2.1%
A*34:02	3.4%	3.4%	0.0%	0.1%	0.4%	0.2%
A*36:01	2.6%	2.6%	0.0%	0.0%	0.2%	0.1%
A*33:01	2.2%	2.0%	0.1%	0.9%	2.2%	0.7%
A*25:01	2.1%	0.3%	0.0%	2.1%	1.0%	1.4%
A*68:03	1.6%	0.0%	0.0%	0.0%	1.6%	0.2%
A*02:05	1.6%	1.5%	0.5%	1.0%	1.6%	0.8%

A*29:01	1.5%	0.0%	1.5%	0.4%	0.2%	0.2%
A*66:01	1.4%	1.4%	0.0%	0.5%	0.6%	0.3%
A*24:03	0.6%	0.0%	0.6%	0.2%	0.3%	0.5%
A*03:02	0.4%	0.0%	0.4%	0.3%	0.2%	0.2%
A*30:04	0.3%	0.2%	0.2%	0.2%	0.3%	0.1%
A*69:01	0.3%	0.0%	0.0%	0.2%	0.3%	0.1%
Total		97.2%	84.8%	99.6%	97.4%	99.0%

1. Gragert L, Madbouly A, Freeman J, Maiers M. Six-locus high resolution HLA haplotype frequencies derived from mixed-resolution DNA typing for the entire US donor registry. Hum Immunol. 2013;74(10):1313-1320.

Supplementary Table 3 - Frequencies of HLA-A super alleles included in the panel of normals across the different human superpopulations. Only alleles with a prevalence > 0.1% in any population are listed below. The “total” row shows the percentage of the population included in the panel of normal. Frequencies were obtained from the NMDP Registry Haplotype Frequencies[1]. “Broad race code” is used to represent different populations: African American (AFA), Asian or Pacific Islander (API), Caucasian (CAU), Hispanic (HIS), Native American (NAM).

	Lung Squamous Cell Carcinoma				Lung Adenocarcinoma			
Covariate	**p**	**HR**	**Lower 95% CI**	**Upper 95% CI**	**p**	**HR**	**Lower 95% CI**	**Upper 95% CI**
Biopsy from Brain or Liver Metastasis	0.173	2.173	0.711	6.642	0.295	1.416	0.738	2.717
ICB Administered with Chemo	0.357	1.411	0.678	2.934	0.138	1.473	0.883	2.457
ICB-Containing Line of Therapy	0.535	1.209	0.664	2.199	0.252	1.207	0.875	1.664
HLA-A LOH	0.888	1.053	0.517	2.145	0.047	0.619	0.386	0.993
TMB ≥ 10 Mut/Mb	0.042	0.273	0.078	0.952	0.276	0.76	0.464	1.245

Supplementary Table 4 - Multivariable Cox proportional hazards model values for the rwOS NSCLC cohort.

ID	Condition	% of A*02:01 Cell Line	% of Other Cell Line	Simulated Tumor Percentage	A*02 Positive Cell Line	Other Cell Line	Other HLA-A Allele	Expected A*02:01 LOH Call
1	A	50	50	0.4	IHW09287	IHW09019	A*30:02:01:01	negative
2	A	50	50	0.4	IHW09046	IHW09063	A*32:01:01	negative
3	A	50	50	0.4	IHW09031	IHW09466	A*24:02:01:02L	negative
4	A	50	50	0.4	IHW09039	IHW09293	A*24:02:01:01	negative
5	A	50	50	0.4	IHW09004	IHW09011	A*01:01:01:01	negative
6	A	50	50	0.4	IHW09056	IHW09029	A*23:01:01	negative
7	A	50	50	0.4	IHW09062	IHW09057	A*66:01:01	negative
8	A	50	50	0.4	IHW09059	IHW09041	A*01:01:01:01	negative
9	A	50	50	0.4	IHW09084	IHW09009	A*01:01:01:01	negative
10	A	50	50	0.4	IHW09036	IHW09010	A*68:02:01:01	negative
11	A	50	50	0.4	IHW09058	IHW09055	A*03:01:01:01	negative
12	A	50	50	0.4	IHW09070	IHW09369	A*24:02:01:01	negative
13	A	50	50	0.4	IHW09068	IHW09027	A*29:02:01:01	negative
14	A	50	50	0.4	IHW09052	IHW09505	A*11:01:01:01	negative
15	A	50	50	0.4	IHW09287	IHW09285	A*02:05:01	negative
16	A	50	50	0.4	IHW09046	IHW09048	A*30:01:01	negative
17	A	50	50	0.4	IHW09031	IHW09107	A*24:02:01:01	negative
18	A	50	50	0.4	IHW09039	IHW09014	A*26:01:01:01	negative
19	A	50	50	0.4	IHW09004	IHW09040	A*01:01:01:01	negative
20	A	50	50	0.4	IHW09056	IHW09143	A*24:02:01:01	negative
21	A	50	50	0.4	IHW09062	IHW09072	A*31:01:02:01	negative
22	A	50	50	0.4	IHW09059	IHW09379	A*29:01:01:01	negative
23	A	50	50	0.4	IHW09084	IHW09106	A*03:01:01:01	negative
24	A	50	50	0.4	IHW09036	IHW09008	A*25:01:01	negative
25	A	50	50	0.4	IHW09058	IHW09043	A*01:01:01:01	negative
26	A	50	50	0.4	IHW09070	IHW09042	A*24:02:01:01	negative

27	A	50	50	0.4	IHW09068	IHW09049	A*33:01:01	negative
28	A	50	50	0.4	IHW09052	IHW09022	A*01:01:01:01	negative
29	B	44.4	55.6	0.2	IHW09287	IHW09019	A*30:02:01:01	positive
30	B	44.4	55.6	0.2	IHW09046	IHW09063	A*32:01:01	positive
31	B	44.4	55.6	0.2	IHW09031	IHW09466	A*24:02:01:02L	positive
32	B	44.4	55.6	0.2	IHW09039	IHW09293	A*24:02:01:01	positive
33	B	44.4	55.6	0.2	IHW09004	IHW09011	A*01:01:01:01	positive
34	B	44.4	55.6	0.2	IHW09056	IHW09029	A*23:01:01	positive
35	B	44.4	55.6	0.2	IHW09062	IHW09057	A*66:01:01	positive
36	B	44.4	55.6	0.2	IHW09059	IHW09041	A*01:01:01:01	positive
37	B	44.4	55.6	0.2	IHW09084	IHW09009	A*01:01:01:01	positive
38	B	44.4	55.6	0.2	IHW09036	IHW09010	A*68:02:01:01	positive
39	B	44.4	55.6	0.2	IHW09058	IHW09055	A*03:01:01:01	positive
40	B	44.4	55.6	0.2	IHW09070	IHW09369	A*24:02:01:01	positive
41	B	44.4	55.6	0.2	IHW09068	IHW09027	A*29:02:01:01	positive
42	B	44.4	55.6	0.2	IHW09052	IHW09505	A*11:01:01:01	positive
43	B	44.4	55.6	0.2	IHW09287	IHW09285	A*02:05:01	positive
44	B	44.4	55.6	0.2	IHW09046	IHW09048	A*30:01:01	positive
45	B	44.4	55.6	0.2	IHW09031	IHW09107	A*24:02:01:01	positive
46	B	44.4	55.6	0.2	IHW09039	IHW09014	A*26:01:01:01	positive
47	B	44.4	55.6	0.2	IHW09004	IHW09040	A*01:01:01:01	positive
48	B	44.4	55.6	0.2	IHW09056	IHW09143	A*24:02:01:01	positive
49	B	44.4	55.6	0.2	IHW09062	IHW09072	A*31:01:02:01	positive
50	B	44.4	55.6	0.2	IHW09059	IHW09379	A*29:01:01:01	positive
51	B	44.4	55.6	0.2	IHW09084	IHW09106	A*03:01:01:01	positive
52	B	44.4	55.6	0.2	IHW09036	IHW09008	A*25:01:01	positive
53	B	44.4	55.6		IHW09058	IHW09043	A*01:01:01:01	positive
54	B	44.4	55.6	0.2	IHW09070	IHW09042	A*24:02:01:01	positive
55	B	44.4	55.6	0.2	IHW09068	IHW09049	A*33:01:01	positive

56	B	44.4	55.6	0.2	IHW09052	IHW09022	A*01:01:01:01	positive
57	C	37.5	62.5	0.4	IHW09287	IHW09019	A*30:02:01:01	positive
58	C	37.5	62.5	0.4	IHW09046	IHW09063	A*32:01:01	positive
59	C	37.5	62.5	0.4	IHW09031	IHW09466	A*24:02:01:02L	positive
60	C	37.5	62.5	0.4	IHW09039	IHW09293	A*24:02:01:01	positive
61	C	37.5	62.5	0.4	IHW09004	IHW09011	A*01:01:01:01	positive
62	C	37.5	62.5	0.4	IHW09056	IHW09029	A*23:01:01	positive
63	C	37.5	62.5	0.4	IHW09062	IHW09057	A*66:01:01	positive
64	C	37.5	62.5	0.4	IHW09059	IHW09041	A*01:01:01:01	positive
65	C	37.5	62.5	0.4	IHW09084	IHW09009	A*01:01:01:01	positive
66	C	37.5	62.5	0.4	IHW09036	IHW09010	A*68:02:01:01	positive
67	C	37.5	62.5	0.4	IHW09058	IHW09055	A*03:01:01:01	positive
68	C	37.5	62.5	0.4	IHW09070	IHW09369	A*24:02:01:01	positive
69	C	37.5	62.5	0.4	IHW09068	IHW09027	A*29:02:01:01	positive
70	C	37.5	62.5	0.4	IHW09052	IHW09505	A*11:01:01:01	positive
71	C	37.5	62.5	0.4	IHW09287	IHW09285	A*02:05:01	positive
72	C	37.5	62.5	0.4	IHW09046	IHW09048	A*30:01:01	positive
73	C	37.5	62.5	0.4	IHW09031	IHW09107	A*24:02:01:01	positive
74	C	37.5	62.5		IHW09039	IHW09014	A*26:01:01:01	positive
75	C	37.5	62.5	0.4	IHW09004	IHW09040	A*01:01:01:01	positive
76	C	37.5	62.5	0.4	IHW09056	IHW09143	A*24:02:01:01	positive
77	C	37.5	62.5	0.4	IHW09062	IHW09072	A*31:01:02:01	positive
78	C	37.5	62.5	0.4	IHW09059	IHW09379	A*29:01:01:01	positive
79	C	37.5	62.5	0.4	IHW09084	IHW09106	A*03:01:01:01	positive
80	C	37.5	62.5	0.4	IHW09036	IHW09008	A*25:01:01	positive
81	C	37.5	62.5	0.4	IHW09058	IHW09043	A*01:01:01:01	positive
82	C	37.5	62.5	0.4	IHW09070	IHW09042	A*24:02:01:01	positive
83	C	37.5	62.5	0.4	IHW09068	IHW09049	A*33:01:01	positive
84	C	37.5	62.5	0.4	IHW09052	IHW09022	A*01:01:01:01	positive

85	D	28.6	71.4	0.6	IHW09287	IHW09019	A*30:02:01:01	positive
86	D	28.6	71.4	0.6	IHW09046	IHW09063	A*32:01:01	positive
87	D	28.6	71.4	0.6	IHW09031	IHW09466	A*24:02:01:02L	positive
88	D	28.6	71.4	0.6	IHW09039	IHW09293	A*24:02:01:01	positive
89	D	28.6	71.4	0.6	IHW09004	IHW09011	A*01:01:01:01	positive
90	D	28.6	71.4	0.6	IHW09056	IHW09029	A*23:01:01	positive
91	D	28.6	71.4	0.6	IHW09062	IHW09057	A*66:01:01	positive
92	D	28.6	71.4	0.6	IHW09059	IHW09041	A*01:01:01:01	positive
93	D	28.6	71.4	0.6	IHW09084	IHW09009	A*01:01:01:01	positive
94	D	28.6	71.4	0.6	IHW09036	IHW09010	A*68:02:01:01	positive
95	D	28.6	71.4	0.6	IHW09058	IHW09055	A*03:01:01:01	positive
96	D	28.6	71.4	0.6	IHW09070	IHW09369	A*24:02:01:01	positive
97	D	28.6	71.4	0.6	IHW09068	IHW09027	A*29:02:01:01	positive
98	D	28.6	71.4	0.6	IHW09052	IHW09505	A*11:01:01:01	positive
99	D	28.6	71.4	0.6	IHW09287	IHW09285	A*02:05:01	positive
100	D	28.6	71.4	0.6	IHW09046	IHW09048	A*30:01:01	positive
101	D	28.6	71.4	0.6	IHW09031	IHW09107	A*24:02:01:01	positive
102	D	28.6	71.4	0.6	IHW09039	IHW09014	A*26:01:01:01	positive
103	D	28.6	71.4	0.6	IHW09004	IHW09040	A*01:01:01:01	positive
104	D	28.6	71.4	0.6	IHW09056	IHW09143	A*24:02:01:01	positive
105	D	28.6	71.4	0.6	IHW09062	IHW09072	A*31:01:02:01	positive
106	D	28.6	71.4	0.6	IHW09059	IHW09379	A*29:01:01:01	positive
107	D	28.6	71.4	0.6	IHW09084	IHW09106	A*03:01:01:01	positive
108	D	28.6	71.4	0.6	IHW09036	IHW09008	A*25:01:01	positive
109	D	28.6	71.4	0.6	IHW09058	IHW09043	A*01:01:01:01	positive
110	D	28.6	71.4	0.6	IHW09070	IHW09042	A*24:02:01:01	positive
111	D	28.6	71.4	0.6	IHW09068	IHW09049	A*33:01:01	positive
112	D	28.6	71.4		IHW09052	IHW09022	A*01:01:01:01	positive
113	E	16.7	83.3	0.8	IHW09287	IHW09019	A*30:02:01:01	positive

114	E	16.7	83.3	0.8	IHW09046	IHW09063	A*32:01:01	positive
115	E	16.7	83.3	0.8	IHW09031	IHW09466	A*24:02:01:02L	positive
116	E	16.7	83.3	0.8	IHW09039	IHW09293	A*24:02:01:01	positive
117	E	16.7	83.3	0.8	IHW09004	IHW09011	A*01:01:01:01	positive
118	E	16.7	83.3	0.8	IHW09056	IHW09029	A*23:01:01	positive
119	E	16.7	83.3	0.8	IHW09062	IHW09057	A*66:01:01	positive
120	E	16.7	83.3	0.8	IHW09059	IHW09041	A*01:01:01:01	positive
121	E	16.7	83.3	0.8	IHW09084	IHW09009	A*01:01:01:01	positive
122	E	16.7	83.3	0.8	IHW09036	IHW09010	A*68:02:01:01	positive
123	E	16.7	83.3	0.8	IHW09058	IHW09055	A*03:01:01:01	positive
124	E	16.7	83.3	0.8	IHW09070	IHW09369	A*24:02:01:01	positive
125	E	16.7	83.3	0.8	IHW09068	IHW09027	A*29:02:01:01	positive
126	E	16.7	83.3	0.8	IHW09052	IHW09505	A*11:01:01:01	positive
127	E	16.7	83.3	0.8	IHW09287	IHW09285	A*02:05:01	positive
128	E	16.7	83.3	0.8	IHW09046	IHW09048	A*30:01:01	positive
129	E	16.7	83.3	0.8	IHW09031	IHW09107	A*24:02:01:01	positive
130	E	16.7	83.3	0.8	IHW09039	IHW09014	A*26:01:01:01	positive
131	E	16.7	83.3	0.8	IHW09004	IHW09040	A*01:01:01:01	positive
132	E	16.7	83.3	0.8	IHW09056	IHW09143	A*24:02:01:01	positive
133	E	16.7	83.3	0.8	IHW09062	IHW09072	A*31:01:02:01	positive
134	E	16.7	83.3	0.8	IHW09059	IHW09379	A*29:01:01:01	positive
135	E	16.7	83.3	0.8	IHW09084	IHW09106	A*03:01:01:01	positive
136	E	16.7	83.3	0.8	IHW09036	IHW09008	A*25:01:01	positive
137	E	16.7	83.3	0.8	IHW09058	IHW09043	A*01:01:01:01	positive
138	E	16.7	83.3	0.8	IHW09070	IHW09042	A*24:02:01:01	positive
139	E	16.7	83.3	0.8	IHW09068	IHW09049	A*33:01:01	positive
140	E	16.7	83.3	0.8	IHW09052	IHW09022	A*01:01:01:01	positive
141	F	9.1	90.9	0.9	IHW09287	IHW09019	A*30:02:01:01	positive
142	F	9.1	90.9	0.9	IHW09046	IHW09063	A*32:01:01	positive

143	F	9.1	90.9	0.9	IHW09031	IHW09466	A*24:02:01:02L	positive
144	F	9.1	90.9	0.9	IHW09039	IHW09293	A*24:02:01:01	positive
145	F	9.1	90.9	0.9	IHW09004	IHW09011	A*01:01:01:01	positive
146	F	9.1	90.9	0.9	IHW09056	IHW09029	A*23:01:01	positive
147	F	9.1	90.9	0.9	IHW09062	IHW09057	A*66:01:01	positive
148	F	9.1	90.9	0.9	IHW09059	IHW09041	A*01:01:01:01	positive
149	F	9.1	90.9	0.9	IHW09084	IHW09009	A*01:01:01:01	positive
150	F	9.1	90.9	0.9	IHW09036	IHW09010	A*68:02:01:01	positive
151	F	9.1	90.9	0.9	IHW09058	IHW09055	A*03:01:01:01	positive
152	F	9.1	90.9	0.9	IHW09070	IHW09369	A*24:02:01:01	positive
153	F	9.1	90.9	0.9	IHW09068	IHW09027	A*29:02:01:01	positive
154	F	9.1	90.9	0.9	IHW09052	IHW09505	A*11:01:01:01	positive
155	F	9.1	90.9	0.9	IHW09287	IHW09285	A*02:05:01	positive
156	F	9.1	90.9	0.9	IHW09046	IHW09048	A*30:01:01	positive
157	F	9.1	90.9	0.9	IHW09031	IHW09107	A*24:02:01:01	positive
158	F	9.1	90.9	0.9	IHW09039	IHW09014	A*26:01:01:01	positive
159	F	9.1	90.9	0.9	IHW09004	IHW09040	A*01:01:01:01	positive
160	F	9.1	90.9	0.9	IHW09056	IHW09143	A*24:02:01:01	positive
161	F	9.1	90.9	0.9	IHW09062	IHW09072	A*31:01:02:01	positive
162	F	9.1	90.9	0.9	IHW09059	IHW09379	A*29:01:01:01	positive
163	F	9.1	90.9	0.9	IHW09084	IHW09106	A*03:01:01:01	positive
164	F	9.1	90.9	0.9	IHW09036	IHW09008	A*25:01:01	positive
165	F	9.1	90.9	0.9	IHW09058	IHW09043	A*01:01:01:01	positive
166	F	9.1	90.9	0.9	IHW09070	IHW09042	A*24:02:01:01	positive
167	F	9.1	90.9	0.9	IHW09068	IHW09049	A*33:01:01	positive
168	F	9.1	90.9	0.9	IHW09052	IHW09022	A*01:01:01:01	positive
169	A	50	50	0.4	IHW09046	IHW09041	A*01:01:01:01	negative
170	A	50	50	0.4	IHW09052	IHW09466	A*24:02:01:02L	negative
171	A	50	50	0.4	IHW09056	IHW09505	A*11:01:01:01	negative

172	A	50	50	0.4	IHW09287	IHW09063	A*32:01:01	negative
173	A	50	50	0.4	IHW09059	IHW09107	A*24:02:01:01	negative
174	B	55.6	44.4	0.2	IHW09046	IHW09041	A*01:01:01:01	negative
175	B	55.6	44.4	0.2	IHW09052	IHW09466	A*24:02:01:02L	negative
176	B	55.6	44.4	0.2	IHW09056	IHW09505	A*11:01:01:01	negative
177	B	55.6	44.4	0.2	IHW09287	IHW09063	A*32:01:01	negative
178	B	55.6	44.4	0.2	IHW09059	IHW09107	A*24:02:01:01	negative
179	C	62.5	37.5	0.4	IHW09046	IHW09041	A*01:01:01:01	negative
180	C	62.5	37.5	0.4	IHW09052	IHW09466	A*24:02:01:02L	negative
181	C	62.5	37.5	0.4	IHW09056	IHW09505	A*11:01:01:01	negative
182	C	62.5	37.5	0.4	IHW09287	IHW09063	A*32:01:01	negative
183	C	62.5	37.5	0.4	IHW09059	IHW09107	A*24:02:01:01	negative
184	D	71.4	28.6	0.6	IHW09046	IHW09041	A*01:01:01:01	negative
185	D	71.4	28.6	0.6	IHW09052	IHW09466	A*24:02:01:02L	negative
186	D	71.4	28.6	0.6	IHW09056	IHW09505	A*11:01:01:01	negative
187	D	71.4	28.6	0.6	IHW09287	IHW09063	A*32:01:01	negative
188	D	71.4	28.6	0.6	IHW09059	IHW09107	A*24:02:01:01	negative
189	E	83.3	16.7	0.8	IHW09046	IHW09041	A*01:01:01:01	negative
190	E	83.3	16.7	0.8	IHW09052	IHW09466	A*24:02:01:02L	negative
191	E	83.3	16.7	0.8	IHW09056	IHW09505	A*11:01:01:01	negative
192	E	83.3	16.7	0.8	IHW09287	IHW09063	A*32:01:01	negative
193	E	83.3	16.7	0.8	IHW09059	IHW09107	A*24:02:01:01	negative
194	F	90.9	9.1	0.9	IHW09046	IHW09041	A*01:01:01:01	negative
195	F	90.9	9.1	0.9	IHW09052	IHW09466	A*24:02:01:02L	negative
196	F	90.9	9.1	0.9	IHW09056	IHW09505	A*11:01:01:01	negative
197	F	90.9	9.1	0.9	IHW09287	IHW09063	A*32:01:01	negative
198	F	90.9	9.1	0.9	IHW09059	IHW09107	A*24:02:01:01	negative

Supplementary Table 5 - Contrived cell line sample details for accuracy study. As detailed in the supplementary methods, each cell line was mixed at a 1:1 mass ratio to simulate an expected

HLA stable specimen (i.e., negative control). These cell lines were then mixed at five different mass ratios to simulate LOH signal consistent with clinical specimens across tumor percentages ranging from 20%-90%.