

SupplementaryMaterials:

HLA Class I Allele Expression and Clinical Outcome in De Novo Metastatic Prostate Cancer

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Table S1: Univariate Analysis and multivariate Analysis of risk factors.

Univariate	CR			OS		
	P	Hazard Ratio	95.0% CI for Exp(B) (Range)	P	Hazard Ratio	95.0% CI for Exp(B) (Range)
Age	0.978	0.992	0.573–1.719	0.701	0.888	0.483–1.630
PSA	0.431	0.878	0.636–1.213	0.188	0.787	0.550–1.124
ISUP Grade group	0.181	1.215	0.913–1.6177	0.034	1.507	1.032–2.200
PCa burden	0.258	1.393	0.784–2.473	0.822	1.077	0.565–2.052
Metastases	0.955	1.011	0.690–1.481	0.777	0.940	0.615–1.438
Pain	0.005	2.333	1.286–4.232	0.000	3.937	1.964–7.893
ECOG PS	0.003	2.433	1.346–4.397	0.003	2.745	1.418–5.314
HLA-A allele	0.048	1.747	1.004–3.039	0.076	1.762	0.942–3.295
Multivariate	CR			OS		
	P	Hazard Ratio	95.0% CI for Exp(B) (Range)	P	Hazard Ratio	95.0% CI for Exp(B) (Range)
Model before Stepwise Selection						
Age	0.562	1.239	0.600–2.558	0.260	1.567	0.717–3.427
PSA	0.388	.999	0.998–1.001	0.438	1.000	0.999–1.002
ISUP Grade group	0.234	1.187	0.895–1.574	0.63	1.389	0.982–1.966
PCa burden	0.804	1.127	0.439–2.896	0.733	1.187	0.480–2.837
Metastases	0.649	1.126	0.675–1.880	0.656	1.135	0.650–1.983
Pain	0.213	2.048	0.663–6.323	0.005	5.200	1.659–16.301
ECOG PS	0.899	1.059	0.433–2.593	0.379	0.654	0.253–1.687
HLA-A allele	0.015	2.636	1.206–5.762	0.005	3.675	1.470–9.189
Model after Stepwise Selection						
HLA-A allele	0.002	2.595	1.401–4.806	0.003	2.863	1.417–5.785
Pain	0.011	2.327	1.212–4.466	0.001	3.558	1.683–7.520

All categorical covariates were transformed into numeric codes as follows: Age: <70; 1, ≥70; 2, PSA: ≤50; 1, >50–≥100; 2, >100; 3, ISUP grade group: GS ≤6; 1, 3+4; 2, 4+3; 3, 8; 4, ≥9; 5, PCa burden: low; 1, high; 2, Metastases: only Lymph Node; 1, only Bone; 2, Lymph Node and Bone; 3, Pain: absent; 1, present; 2, ECOG PS: negative; 1, ≥1; 2 & HLA-A allele: HLA-A*02:01; 1, HLA-A*02:01+; 2.

Table S2. Individual clinicopathological characteristics, treatment sequence, clinical outcome, and HLA-A expression.

Patient	Age (years)	Baseline PSA (ng/mL)	Gleason Score	All disease sites at baseline ^o	Burden PCa (High: visceral metastases and/or 4 or more bone metastases)	ECOG PS	Pain	Treatments	Endpoints		HLA-A*
									Time from diagnosis to CRPC	OS (from diagnosis) (years)	
M01	81	5.79	10 (5+5)	BONE	HIGH	≥1	PRESENT	BIC,LEU,ABI+P,DOC,CAB	1.04	2.16	HLA- A*02:01 HLA- A*02:01
M02	66	18.7	9 (4+5)	BONE	HIGH	0	ABSENT	DEG,BIC,ENZ,ABI+P,DOC	2.99	(7.64)	HLA- A*26:01 HLA- A*66:01
M03	82	71.32	7 (3+4)	BONE	HIGH	≥1	PRESENT	DEG,BIC,ENZ,P	2.40	4.67	HLA- A*02:01 HLA- A*68:01
M04	52	738.6	9 (4+5)	LN,BONE	HIGH	0	PRESENT	DEG,DOC,P	(2.74)	(2.74)	HLA- A*32:01 HLA- A*24:02
M05	65	47.13	8 (4+4)	LN,BONE	LOW	0	ABSENT	DEG	(8.01)	(8.01)	HLA- A*02:05 HLA- A*32:01
M06	56	617.9	8 (4+4)	LN,BONE	LOW	0	ABSENT	DEG	(6.87)	(6.87)	HLA- A*02:01 HLA- A*24:02
M07	73	243.7	9 (4+5)	LN	LOW	0	ABSENT	BIC,LEU,P,DOC,CAB	2.56	(7.01)	HLA- A*02:01 HLA- A*26:01
M08	76	119.2	8 (4+4)	BONE	LOW	≥1	PRESENT	BIC,LEU,ENZ,DOC	1.68	3.72	HLA- A*26:01 HLA- A*24:02
M09	66	1000	9 (4+5)	BONE	HIGH	≥1	PRESENT	BIC,TRIPT,DOC,P,LEU,ENZ,ABI+P,ETOP	0.16	3.93	HLA- A*30:01 HLA- A*33:01
M10	66	789.1	8 (4+4)	BONE	HIGH	0	ABSENT	DEG,BIC,ABI+P,DOC, ABI+P,ENZ,CAB	1.77	5.38	HLA- A*03:01 HLA- A*68:01
M11	64	16.11	9 (4+5)	LN,BONE	LOW	≥1	PRESENT	DEG,LEU,ETOP+DEXA,CAB	1.59	4.22	HLA- A*02:01 HLA- A*30:01
M12	81	41.9	7 (4+3)	LN,BONE	LOW	≥1	ABSENT	DEG,BIC,ENZ,ABI+P	3.66	5.87	HLA- A*01:01 HLA- A*26:01
M13	70	68.06	7 (4+3)	LN,BONE	HIGH	0	PRESENT	BIC,LEU,ENZ,DOC	1.95	3.33	HLA- A*32:01 HLA- A*11:01
M14	75	1356	9 (4+5)	BONE	HIGH	≥1	PRESENT	DEG,ENZ,DOC,P,ETOP	1.55	3.41	HLA- A*01:01 HLA- A*24:02
M15	80	24.88	10 (5+5)	BONE	LOW	0	ABSENT	BIC,TRIPT,ENZ	7.31	(7.92)	HLA- A*03:02 HLA- A*11:01

M16	61	59.6	8 (4+4)	BONE	HIGH	0	PRESENT	BIC,LEU,DOC,ETOP	2.50	3.17	HLA- HLA- A*33:03 A*24:02
M17	71	360.26	8 (4+4)	LN,BONE	LOW	≥1	PRESENT	BIC,LEU,ENZ,DOC	1.50	5.17	HLA- HLA- A*01:01 A*03:01
M18	75	497.6	9 (4+5)	LN,BONE	LOW	≥1	ABSENT	BIC,LEU,P	4.11	4.78	HLA- HLA- A*02:01 A*01:01
M19	84	104	8 (4+4)	BONE	LOW	≥1	ABSENT	LEU,ENZ,ABI+P	0.15	(3.59)	HLA- HLA- A*02:01 A*02:01
M20	73	58	9 (5+4)	LN,BONE	LOW	0	ABSENT	BIC,TRIPT,DOC,P	0.46	0.85	HLA- HLA- A*02:01 A*26:01
M21	65	1303	6 (3+3)	LN,BONE	HIGH	0	PRESENT	DEG,ENZ	0.71	1.21	HLA- HLA- A*02:01 A*24:02
M22	86	124	8 (4+4)	LN	LOW	≥1	PRESENT	DEG	(2.47)	(2.47)	HLA- HLA- A*32:01 A*24:02
M23	70	79.3	9 (4+5)	BONE	HIGH	≥1	PRESENT	BIC,LEU,ABI+P	1.90	(4.49)	HLA- HLA- A*30:02 A*24:02
M24	59	75.9	8 (4+4)	BONE	LOW	0	ABSENT	LEU,ABI+P,DOC	10.70	(15.35)	HLA- HLA- A*26:01 A*24:02
M25	69	1000	MISSING	BONE	HIGH	≥1	PRESENT	DEG,ENZ	2.02	(3.05)	HLA- HLA- A*03:01 A*68:01
M26	49	21	9 (4+5)	BONE	HIGH	≥1	PRESENT	DEG,ABI+P	1.55	2.87	HLA- HLA- A*02:01 A*32:01
M27	84	14.88	9 (4+5)	LN	LOW	0	PRESENT	DEG,P	ND	1.95	HLA- HLA- A*02:01 A*25:01
M28	71	4.1	MISSING	LN,BONE	LOW	≥1	PRESENT	LEU	0.84	1.36	HLA- HLA- A*01:01 A*32:01
M29	68	20	9 (5+4)	BONE	LOW	≥1	PRESENT	LEU,DOC+P,CAB	ND	4.64	HLA- HLA- A*02:01 A*02:01
M30	73	MISSING	9 (5+4)	MISSING	MISSING	0	ABSENT	DEG,DOC+P	4.26	9.41	HLA- HLA- A*02:01 A*23:01
M31	64	10.01	10 (5+5)	LN	LOW	≥1	PRESENT	LEU,DOC+P,CAB	0.00	2.22	HLA- HLA- A*02:01 A*02:01
M32	68	35	8 (4+4)	BONE	HIGH	0	PRESENT	TRIPT,DOC+P	ND	3.99	HLA- HLA- A*01:01 A*69:01
M33	80	11	8 (4+4)	MISSING	MISSING	0	ABSENT	DEG,ABI+P	ND	4.67	HLA- HLA- A*01:01 A*03:01

M34	67	342	MISSING	LN,BONE	HIGH	≥1	PRESENT		LEU	0.58	0.80	HLA- A*26:01	HLA- A*03:01
M35	66	38.26	8 (4+4)	LN	LOW	0	ABSENT	GOS,BIC,DOC+P,DEXA,ENZ,ETOP+P		1.94	5.02	HLA- A*02:01	HLA- A*26:01
M36	61	34.77	7 (3+4)	BONE	LOW	0	ABSENT		LEU,BIC	8.10	(9.25)	HLA- A*33:01	HLA- A*24:02
M37	69	183	6 (3+3)	BONE	HIGH	0	PRESENT		DEG,BIC,ABI+P	3.44	(9.29)	HLA- A*03:01	HLA- A*68:01
M38	80	134.3	9 (4+5)	LN,BONE	LOW	0	ABSENT	BIC,LEU,DEG,ENZ,ABI+P,DOC,CAB		1.19	4.67	HLA- A*03:01	HLA- A*03:01
M39	56	9	9 (4+5)	LN,BONE	LOW	0	ABSENT		LEU,ETOP	0.24	0.46	HLA- A*02:01	HLA- A*02:01
M40	65	100	7 (4+3)	LN,BONE	HIGH	0	PRESENT		DEG,BIC,ENZ	1.60	(2.15)	HLA- A*11:01	HLA- A*24:07
M41	78	388.4	9 (5+4)	BONE	LOW	0	ABSENT		BIC,LEU	(1.70)	(1.70)	HLA- A*33:03	HLA- A*03:01
M42	71	126.73	8 (4+4)	LN,BONE	HIGH	0	PRESENT		DEG,LEU,ENZ	2.65	(3.01)	HLA- A*24:02	HLA- A*24:02
M43	49	73	9 (4+5)	LN,BONE	HIGH	0	PRESENT		LEU,ENZ,DOC	5.27	(6.13)	HLA- A*02:02	HLA- A*23:01
M44	67	70.11	7 (4+3)	LN,BONE	HIGH	0	ABSENT		BIC,LEU,ENZ	2.04	(4.20)	HLA- A*29:01	HLA- A*24:02
M45	81	MISSING	9 (5+4)	MISSING	MISSING	≥1	PRESENT		LEU	(1.53)	(1.53)	HLA- A*03:01	HLA- A*24:02
M46	70	841	9 (4+5)	LN,BONE	HIGH	≥1	PRESENT		LEU,DOC	(1.48)	(1.48)	HLA- A*03:01	HLA- A*24:02
M47	88	5.5	8 (4+4)	BONE	LOW	0	ABSENT		BIC,LEU,ENZ	2.73	4.71	HLA- A*24:02	HLA- A*26:01
M48	84	6806	MISSING	BONE	HIGH	≥1	PRESENT		BIC,LEU,TRIPT	(1.47)	(1.47)	HLA- A*01:01	HLA- A*68:01
M49	65	2.38	9	BONE	HIGH	0	PRESENT		LEU,ABI+P,ETOP	0.00	3.75	HLA- A*03:01	HLA- A*68:01
M50	88	740,3	9 (5+4)	BONE	HIGH	≥1	PRESENT		LEU	(0.88)	(0.88)	HLA- A*01:01	HLA- A*24:02
M51	64	183.6	9 (5+4)	BONE	HIGH	≥1	PRESENT		LEU,DOC+P	(0.79)	(0.79)	HLA- A*02:01	HLA- A*01:01

M52	67	7	10 (5+5)	LN,BONE	HIGH	≥1	PRESENT	LEU,ENZ,DOC	1.22	(2.13)	HLA- A*02:01	HLA- A*30:01
M53	68	291.5	10 (5+5)	LN,BONE	HIGH	≥1	PRESENT	LEU,DEXA	(0.32)	0.32	HLA- A*02:01	HLA- A*24:02
M54	80	MISSING	7 (4+3)	LN,BONE	HIGH	0	ABSENT	BIC,LEU,ABI+P,ENZ	3.93	(5.82)	HLA- A*02:01	HLA- A*32:01
M56	71	81.72	9 (4+5)	LN	LOW	0	ABSENT	BIC,LEU,SRTX,ENZ,DOC,DEXA,ABI+P	1.04	3.78	HLA- A*01:01	HLA- A*31:01
M57	84	14	7 (4+3)	BONE	LOW	0	ABSENT	BIC,DEXA,TRIPT,ABI+P	4.57	(9.13)	HLA- A*01:01	HLA- A*24:02

ABI: Abiraterone, ABI+P: Abiraterone plus Prednisolone, CAB: Cabazitaxel, CARBO: Carboplatine, DEG: Degarelix, DEXA: Dexamethasone, DOC: Docetaxel, DOC+P: Docetaxel plus Prednisolone, ENZ: Enzalutamide, ETOP: Etoposide, ETOP+DEXA: Etoposide plus Dexamethasone, ETOP+P: Etoposide plus Prednisolone, GOS: Goserelin, LEU: Leuprorelin, LN: lymph nodes, P: Prednisolone, TRIPT: Triptorelin. ^oAs reported by CT scan (abdominal) or bone scan; ND = Not Determined; Parentheses indicate censoring of the data at the last time the patient was known not to present the event.

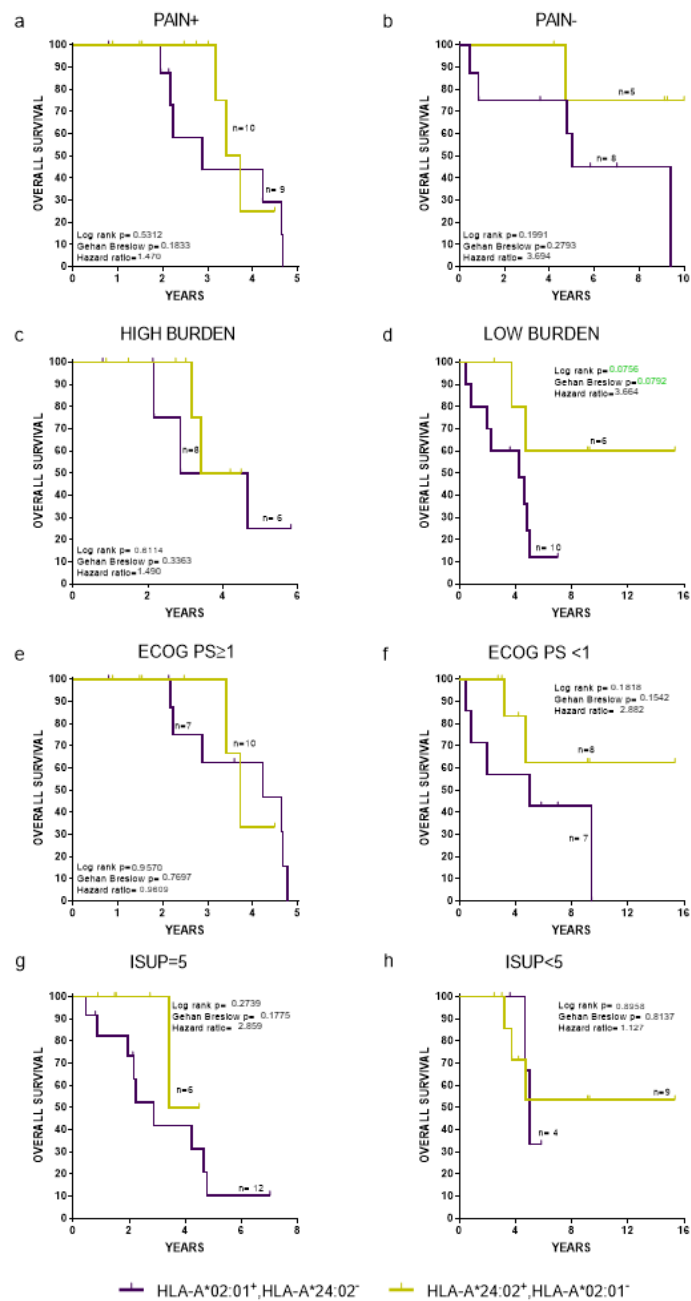


Figure S1. Kaplan-Meier curves illustrate time to OS for HLA-A*02:01⁺HLA-A*24:02⁻ vs. HLA-A*24:02⁺HLA-A*02:01⁻ patients, stratified by the indicated clinicopathological criteria.