

Table S1. Univariate analyses for significant clinical factors and selected clinical outcomes

	Relapse			Relapse-Free Survival			Neutrophil Engraftment			Platelet Engraftment		
Covariates	HR	95% CI	P	HR	95% CI	P	HR	95% CI	P	HR	95% CI	P
Male Gender	1.107	0.659-1.861	NS	0.795	0.540-1.170	NS	0.896	0.648-1.238	NS	1.205	0.837-1.734	NS
Age at Transplant*	0.995	0.978-1.013	NS	1.010	0.997-1.023	0.121	0.991	0.981-1.002	0.099	0.991	0.980-1.003	0.144
Donor Age at Transplant*	1.004	0.986-1.022	NS	1.011	0.998-1.024	0.103	0.997	0.985-1.009	NS	0.995	0.982-1.008	NS
Presence of Sex Mismatch	0.798	0.472-1.348	NS	0.790	0.537-1.164	NS	0.944	0.685-1.302	NS	0.855	0.595-1.230	NS
CMV Match Status												
D+/R+	-	-	-	-	-	-	-	-	-	-	-	-
D+/R-	2.499	1.120-5.576	0.025	2.622	1.444-4.763	0.002	0.526	0.303-0.913	0.022	0.587	0.310-1.114	0.103
D-/R+	0.847	0.416-1.722	NS	1.162	0.690-1.958	NS	0.683	0.435-1.072	0.097	0.854	0.540-1.351	NS
D-/R-	0.941	0.469-1.888	NS	1.081	0.645-1.810	NS	0.791	0.527-1.188	NS	0.740	0.468-1.170	0.197
Donor Relationship												
Child	-	-	-	-	-	-	-	-	-	-	-	-
Parent	1.385	0.640-2.993	NS	0.864	0.465-1.607	NS	1.307	0.763-2.238	NS	1.541	0.884-2.688	0.128
Sibling	1.085	0.600-1.963	NS	1.189	0.775-1.824	NS	1.059	0.737-1.522	NS	0.82	0.550-1.222	NS
Ablative Regimen	0.72	0.417-1.241	NS	0.861	0.577-1.283	NS	0.916	0.662-1.268	NS	0.811	0.567-1.160	NS
Disease Status at Transplant												
Active Disease	-	-	-	-	-	-	-	-	-	-	-	-
Remission	0.464	0.275-0.782	0.004	0.777	0.523-1.154	NS	1.069	0.768-1.487	NS	1.183	0.817-1.713	NS
AML	1.239	0.717-2.141	NS	0.816	0.549-1.213	NS	0.95	0.698-1.294	NS	1.055	0.716-1.556	NS
Refined Disease Risk Index												
Low/Intermediate	-	-	-	-	-	-	-	-	-	-	-	-
High/Very High	1.396	0.816-2.388	NS	1.276	0.854-1.907	NS	0.976	0.700-1.361	NS	0.955	0.657-1.388	NS
HCT-CI ³⁸	0.945	0.829-1.076	NS	1.096	0.998-1.204	0.055	0.936	0.868-1.009	0.086	0.937	0.860-1.021	0.137
Presence of DSA	0.896	0.387-2.075	NS	1.805	1.067-3.055	0.028	0.696	0.429-1.128	0.141	0.602	0.323-1.120	0.109
Presence of Any Anti-HLA Ab	0.961	0.535-1.724	NS	0.923	0.603-1.414	NS	0.927	0.658-1.306	NS	0.870	0.590-1.284	NS
Presence of Class I Anti-HLA Ab	0.818	0.453-1.477	NS	1.016	0.663-1.556	NS	0.860	0.605-1.223	NS	0.83	0.559-1.232	NS
Presence of Class II Anti-HLA Ab	1.593	0.858-2.957	0.14	1.252	0.784-2.000	NS	0.979	0.661-1.452	NS	0.878	0.548-1.406	NS

HCT-CI indicates the Hematopoietic Cell Transplantation-Comorbidity Index.³⁸ DSA indicates donor-specific antibodies. Ab indicates antibodies. NS (non-significant) indicates a p-value greater than 0.2.

* Treated as a continuous variable

Table SII. Univariate relationships between epitope mismatch at individual loci and clinical outcomes

HLA-DRB1 Epitope Mismatch

	GvH (Median 7, Range 0-16)			HvG (Median 7, Range 0-19)		
Outcome	HR	95% CI	P	HR	95% CI	P
Relapse	0.933	0.885-0.982	0.008	1.007	0.955-1.063	NS
OS	0.962	0.923-1.002	0.061	1.018	0.979-1.058	NS
RFS	0.956	0.920-0.994	0.023	1.011	0.974-1.049	NS
TRM	1.011	0.956-1.070	NS	1.013	0.961-1.068	NS
aGvHD	1.008	0.948-1.072	NS	-	-	-
cGvHD	1.025	0.964-1.091	NS	-	-	-
Neutrophil Engraftment	-	-	-	0.979	0.945-1.013	NS
Platelet Engraftment	-	-	-	0.971	0.934-1.009	0.137

HLA-DQB1 Epitope Mismatch

	GvH (Median 6, Range 0-20)			HvG (Median 7, Range 0-20)		
Outcome	HR	95% CI	P	HR	95% CI	P
Relapse	0.964	0.921-1.010	0.120	0.993	0.950-1.038	0.754
OS	0.978	0.945-1.014	NS	1.029	0.993-1.066	0.116
RFS	0.971	0.939-1.005	0.091	1.025	0.991-1.061	0.152
TRM	1.004	0.957-1.053	NS	1.039	0.987-1.094	0.148
aGvHD	0.998	0.948-1.050	NS	-	-	-
cGvHD	1.014	0.967-1.063	NS	-	-	-
Neutrophil Engraftment	-	-	-	0.957	0.926-0.989	0.010
Platelet Engraftment	-	-	-	0.953	0.918-0.988	0.009

HLA-A Epitope Mismatch

	GvH (Median 4, Range 0-12)			HvG (Median 4, Range 0-14)		
Outcome	HR	95% CI	P	HR	95% CI	P
Relapse	0.970	0.900-1.045	NS	0.996	0.932-1.064	NS
OS	1.029	0.977-1.084	NS	1.018	0.965-1.075	NS
RFS	1.017	0.968-1.069	NS	1.008	0.958-1.062	NS
TRM	1.044	0.978-1.115	0.195	1.009	0.933-1.092	NS
aGvHD	0.921	0.849-0.998	0.045	-	-	-
cGvHD	0.920	0.847-0.999	0.047	-	-	-
Neutrophil Engraftment	-	-	-	0.961	0.920-1.003	0.071
Platelet Engraftment	-	-	-	0.966	0.922-1.012	0.146

HLA-B Epitope Mismatch

	GvH (Median 3, Range 0-12)			HvG (Median 3.5, Range 0-10)		
Outcome	HR	95% CI	P	HR	95% CI	P
Relapse	1.026	0.894-1.178	NS	0.977	0.890-1.073	NS
OS	1.016	0.928-1.112	NS	1.044	0.971-1.123	NS
RFS	1.042	0.954-1.138	NS	1.036	0.967-1.110	NS
TRM	1.017	0.908-1.140	NS	1.083	0.980-1.197	0.118
aGvHD	1.083	0.980-1.198	0.119	-	-	-
cGvHD	1.100	0.985-1.229	0.091	-	-	-
Neutrophil Engraftment	-	-	-	0.993	0.933-1.057	NS
Platelet Engraftment	-	-	-	0.987	0.926-1.051	NS

HLA-C Epitope Mismatch

	GvH (Median 3, Range 0-11)			HvG (Median 2, Range 0-9)		
Outcome	HR	95% CI	P	HR	95% CI	P
Relapse	1.048	0.966-1.137	NS	1.040	0.949-1.138	NS
OS	1.013	0.944-1.086	NS	1.077	0.998-1.163	0.055
RFS	1.016	0.952-1.084	NS	1.09	1.015-1.171	0.019
TRM	0.968	0.873-1.073	NS	1.067	0.957-1.190	NS
aGvHD	1.019	0.932-1.113	NS	-	-	-
cGvHD	0.973	0.878-1.079	NS	-	-	-
Neutrophil Engraftment	-	-	-	0.959	0.901-1.020	0.186
Platelet Engraftment	-	-	-	0.959	0.892-1.030	NS

OS indicates overall survival. RFS indicates relapse-free survival. TRM indicates treatment-related mortality. aGvHD indicates acute graft-versus-host disease. cGvHD indicates chronic graft-versus-host disease. NS (non-significant) indicates a p-value greater than 0.2.