

## Supplemental tables and figure

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**Table S1. Incidence of acute GVHD, leukemia relapse and survival by ethnicity**

<b>Ethnicity of the Pair</b>	<b>N</b>	<b>Grades II-IV Acute GVHD (%)</b>	<b>Grades III-IV Acute GVHD (%)</b>	<b>Relapse (%)</b>	<b>5-year Survival (%)</b>
Japanese	1734	40.0	15.3	25.4	50.2
Asian/Pacific Islander	19	42.1	15.7	57.8	42.1
Caucasian	1794	56.5	22.6	31.9	39.0
African American	34	50.0	29.4	29.4	26.1
Hispanic	27	55.5	29.6	38.4	16.0
Mismatched	171	60.0	23.5	33.2	32.3
Unknown	555	61.7	20.1	30.0	48.3

**Table S2. Leukemia relapse rate by the severity of acute GVHD.**

<b>Acute GVHD</b>	<b>Japanese Pairs</b>		<b>Caucasian Pairs</b>	
	<b>N</b>	<b>5-yr Relapse Rate (%)</b>	<b>N</b>	<b>5-yr Relapse Rate (%)</b>
Grades 0 - II	290	26.6	376	34.4
Grades III - IV	38	29.8	74	26.6
		P=0.85		P=0.62
Grades 0 - I	218	28.3	205	35.9
Grades II - IV	110	23.9	245	30.5
		P=0.29		P=0.16

**Table S3. Other risk factors for acute GVHD, relapse and survival.**

	N	Grades II-IV Acute GVHD HR (95% CI)	P Value	Grades III-IV Acute GVHD HR (95% CI)	P Value	Relapse HR (95% CI)	P Value	Survival HR (95% CI)	P Value
<b>Patient age (linear)</b>		1.00 (0.96-1.00)	0.86	1.00 (1.00-1.01)	0.68	1.00 (0.99-1.00)	0.90	1.01 (1.01-1.02)	<0.001
<b>Donor age (linear)</b>		1.01 (1.00-1.01)	0.006	1.014 (1.01-1.02)	0.001	1.00 (0.99-1.00)	0.17	1.01 (1.00-1.01)	0.004
<b>Disease</b>									
Acute lymphoblastic leukemia	1232	1.00		1.00		1.00		1.00	
Acute myeloid leukemia	1758	0.90 (0.81-1.01)	0.10	0.88 (0.73-1.07)	0.22	0.89 (0.77-1.03)	0.13	0.85 (0.76-0.95)	0.004
Chronic myeloid leukemia	1345	1.24 (1.06-1.45)	0.007	1.43 (1.12-1.82)	0.004	0.73 (0.57-0.92)	0.009	0.87 (0.75-1.02)	0.09
<b>Leukemia risk*</b>									
Low	938	1.00		1.00		1.00		1.00	
Intermediate	2441	1.09 (0.93-1.27)	0.28	1.27 (1.00-1.61)	0.05	2.49 (1.86-3.33)	<0.001	1.81 (1.54-2.14)	<0.001
High	931	1.17 (0.98-1.41)	0.08	1.53 (1.16-2.02)	0.002	8.18 (6.06-11.06)	<0.001	4.32 (3.62-5.15)	<0.001
Unknown	25	1.25 (0.66-2.38)	0.48	1.06 (0.33-3.39)	0.91	3.65 (1.65-8.08)	0.001	1.61 (0.82-3.17)	0.16
<b>GVHD prophylaxis</b>									
Cyclosporine based	2593	1.00		1.00		1.00		1.00	
Tacrolimus based	1536	0.83 (0.75-0.92)	0.002	0.93 (0.79-1.09)	0.39	0.97 (0.84-1.10)	0.66	0.87 (0.80-0.96)	0.007
Other	78	1.00 (0.74-1.34)	1.0	0.98 (0.58-1.67)	0.97	1.24 (0.83-1.85)	0.28	1.12 (0.82-1.52)	0.45
Unknown	128	0.61 (0.43-0.88)	0.009	0.49 (0.26-0.94)	0.03	1.12 (0.70-1.81)	0.62	1.13 (0.81-1.57)	0.45
<b>Conditioning regimen</b>									
Myeloablative	3687	1.00		1.00		1.00		1.00	
Non-myeloablative/ reduced intensity	381	0.92 (0.77-1.08)	0.34	1.20 (0.93-1.56)	0.15	1.36 (1.09-1.69)	0.005	1.02 (0.88-1.19)	0.71

Unknown	267	0.53 (0.41-0.68)	<0.001	1.14 (0.78-1.68)	0.47	0.77 (0.53-1.11)	0.17	0.83 (0.65-1.07)	0.16
<b>Total body irradiation</b>									
no	949	1.00		1.00		1.00		1.00	
yes	3371	1.22 (1.09-1.36)	<0.001	1.20 (1.00-1.44)	0.05	1.03 (0.88-1.20)	0.69	1.02 (0.91-1.13)	0.71
Unknown	15	1.11 (0.45-2.72)	0.81	0.78 (0.19-3.21)	0.74	1.68 (0.77-3.63)	0.19	1.27 (0.67-2.41)	0.45

\*Low risk: chronic phase (CP) of chronic myeloid leukemia, Intermediate risk: the first or second remission of acute lymphoblastic leukemia and acute myeloid leukemia, or the second CP or accelerated phase of chronic myeloid leukemia, High risk: more advanced stage than intermediate risk.

**Table S4. Hazard risk (HR) of acute GVHD, leukemia relapse and mortality by ethnicity in bone marrow transplantation cases**

	N	Grades II-IV Acute GVHD HR (95% CI)	P Value	Grades III-IV Acute GVHD HR (95% CI)	P Value	Relapse HR (95% CI)	P Value	Mortality HR (95% CI)	P Value
<b>Ethnicity</b>									
Japanese pair	1734	1.00		1.00		1.00		1.00	
Asian pair	9	1.06 (0.39-2.84)	0.903	1.50 (0.37-6.05)	0.569	2.68 (1.10-6.54)	0.03	1.57 (0.70-3.53)	0.27
Caucasian pair	1272	1.46 (1.30-1.64)	<0.001	1.45 (1.21-1.74)	<0.001	1.63 (1.38-1.92)	<0.001	1.45 (1.30-1.62)	<0.001
African pair	24	1.34 (0.76-2.34)	0.302	1.83 (0.85-3.96)	0.121	2.71 (1.26-5.84)	0.011	2.66 (1.65-4.29)	<0.001
Hispanic pair	19	1.63 (0.89-2.97)	0.108	1.57 (0.58-4.25)	0.369	2.90 (1.36-6.18)	0.006	2.26 (1.32-3.85)	0.003
Mismatched ethnicity	73	1.50 (1.09-2.06)	0.011	1.37 (0.82-2.29)	0.216	1.75 (1.11-2.75)	0.016	1.67 (1.25-2.24)	<0.001
Unknown ethnicity	349	1.69 (1.40-2.04)	<0.001	1.52 (1.12-2.06)	0.007	1.55 (1.16-2.00)	0.003	1.30 (1.07-1.58)	0.006
<b>HLA-DPB1 matching (GVH direction)</b>									
Match	994	1.00		1.00		1.00		1.00	
1-allele mismatch	1414	1.36 (1.20-1.54)	<0.001	1.46 (1.19-1.79)	0.001	0.67 (0.57-0.74)	<0.001	1.02 (0.91-1.15)	0.620
2-allele mismatch	744	1.51 (1.31-1.74)	<0.001	1.52 (1.21-1.91)	<0.001	0.54 (0.44-0.66)	<0.001	1.04 (0.91-1.19)	0.494
Unknown	328	1.05 (0.85-1.30)	0.634	0.99 (0.69-1.41)	0.299	0.61 (0.47-0.81)	0.001	0.69 (0.56-0.85)	0.001

Multivariate analysis adjusted for clinical factors listed in Table 1. Data from one North American pair is not shown in this table.

**Table S5. Leukemia relapse rate by ethnicity, leukemia cell type and the status at transplantation in bone marrow transplantation cases**

	N	Acute lymphoblastic leukemia	N	Acute myeloid leukemia	N	Chronic myeloid leukemia
<b>Early status</b>						
Japanese pair	469	23.9 <sup>†</sup>	465	20.9	269	7.3
		p= 0.002		p<0.001		p=0.012
Caucasian pair	197	32.4	215	27.9	449	11.4
<b>Advanced status<sup>‡</sup></b>						
Japanese pair	124	54.5	205	43.7	123	24.3
		p=0.45		p=0.11		p=0.52
Caucasian pair	90	48.8	149	46.3	161	23.8

\*First and second complete remission (CR) of acute lymphoblastic leukemia or acute myeloid leukemia at transplantation, first chronic phase of chronic myeloid leukemia at transplantation. <sup>†</sup> Cumulative incidence (%) of leukemia relapse at 5 years after transplantation. <sup>‡</sup> More advanced status than early status.

**Table S6. Data contributors from International Histocompatibility Working Group in Hematopoietic Cell Transplantation.**

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