

## **Supplementary Information**

### **Systematic analysis of hematopoietic gene expression profiles for prognostic prediction in acute myeloid leukemia**

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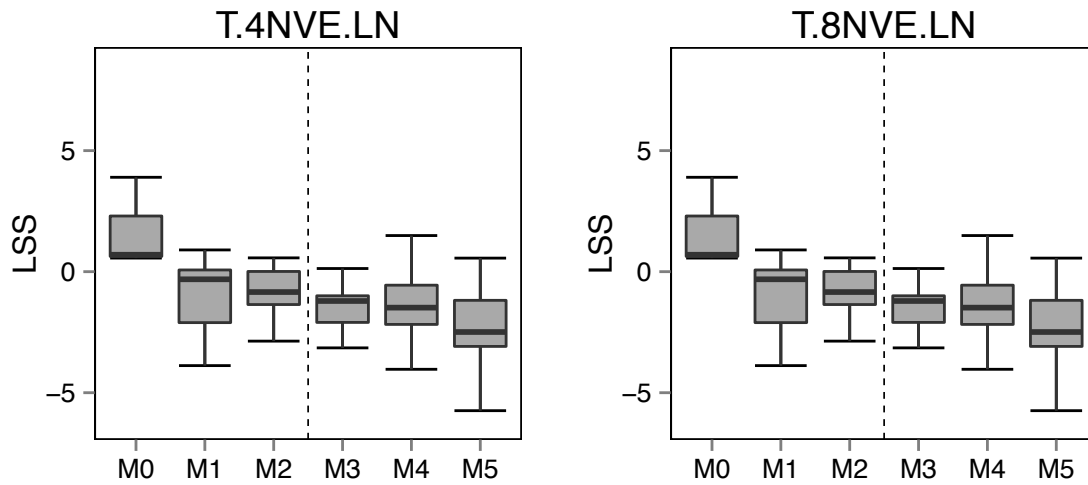
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**Supplementary Figure S1. Association of naïve T Cell LSS with FAB subtype.** Distributions of the CD4+ naïve T cell (left) and CD8+ naïve T cell (right) LSS across the different FAB subtypes (M0-M5) available in the Bullinger dataset. There was a significant difference in LSS between the subtypes for both cell types ( $P = 4e-3$  and  $4e-4$ , Kruskal-Wallis, CD4+ naïve T cell and CD8+ naïve T cell, respectively). For all panels, box spans quartiles, with line representing median. Outliers were not removed. Whiskers represent absolute range excluding outliers.

**Supplementary Table S1. Univariate Cox PH Models for Hematopoietic Cell Types**

Name	P-val	Adj.p-val	HR	95% CI
CD150negCD48neg.BM	4.17E-05	0.01	1.17	1.08 - 1.25
NKT.44posNK1.1pos.TH	2.84E-04	0.03	0.81	0.72 - 0.91
TGD.VG5pos.IEL.	8.92E-04	0.07	0.73	0.60 - 0.88
LTHSC.FL	2.08E-03	0.08	1.09	1.03 - 1.14
T.DN1neg2.TH	2.39E-03	0.08	1.27	1.09 - 1.48
X0negSTnegV1_SC.LT34F.BM	2.45E-03	0.08	1.06	1.02 - 1.10
T.ETP.TH	2.72E-03	0.08	1.21	1.07 - 1.36
MLP.BM	2.76E-03	0.08	1.08	1.03 - 1.14
CD150negCD48neg.FL	2.84E-03	0.08	1.09	1.03 - 1.16
TGD.VG5pos.ACT.IEL.	0.01	0.13	0.81	0.70 - 0.94
X0negSTnegV1_DC.103neg11Bpos.LULN	0.01	0.19	0.92	0.86 - 0.98
X0negSTnegV1_DC.PDC.8pos.SLN	0.01	0.21	0.79	0.66 - 0.95
DC.LC.SK	0.01	0.21	0.96	0.93 - 0.99
DC.8neg4neg11Bpos.SLN	0.01	0.21	0.88	0.79 - 0.97
X0negSTnegV1_DC.103pos11Bneg.LULN	0.01	0.21	0.96	0.93 - 0.99
T.8EFF.SP.OT1.D8.VSVOVA	0.02	0.23	0.92	0.85 - 0.98
NK.Hpos.MCMV1.SP	0.02	0.23	0.77	0.61 - 0.95
DC8.LN	0.02	0.23	0.90	0.83 - 0.98
LTHSC.BM	0.02	0.23	1.15	1.02 - 1.29
MO.6CposIIneg.LN	0.02	0.24	0.96	0.93 - 0.99
DC7.LN	0.02	0.24	0.91	0.85 - 0.99
X0negSTnegV1_DC.PDC.8pos.MLN	0.02	0.24	0.82	0.70 - 0.97
NK.Hpos.MCMV7.SP	0.02	0.24	0.87	0.78 - 0.98
DC.8neg4neg11Bneg.SLN	0.02	0.24	0.93	0.88 - 0.99
X0negSTnegV1_B6.14W.ABD.TR	0.03	0.25	0.89	0.80 - 0.99
CLP	0.03	0.25	1.10	1.01 - 1.21
X0negSTnegV1_SC.ST34F.BM	0.03	0.28	1.06	1.01 - 1.11
DC4.MLN	0.03	0.29	0.90	0.82 - 0.99
DC.103pos.11Bneg.POLYIC.LU	0.04	0.29	0.95	0.90 - 1.00
TGD.VG5neg.IEL	0.04	0.29	0.89	0.79 - 0.99
NK.MCMV7	0.04	0.30	0.88	0.78 - 0.99
DC9.LN	0.04	0.30	0.96	0.92 - 1.00
X0negSTnegV1_DC.11CLOSER.SALM3.SI	0.04	0.30	0.94	0.89 - 1.00
X0negSTnegV1_DC.103neg11Bpos.SALM3.SI	0.04	0.30	0.93	0.87 - 1.00
DC.103CLOSER.SI	0.05	0.31	0.89	0.79 - 1.00
DC3.MLN	0.05	0.31	0.94	0.89 - 1.00
PROB.FRA.FL	0.05	0.31	1.06	1.00 - 1.12
NKT.4pos.SP	0.05	0.31	0.94	0.89 - 1.00
DC.103neg.11Bpos.POLYIC.LU	0.05	0.31	0.95	0.91 - 1.00
DC.8neg4neg11Bpos.MLN	0.05	0.31	0.94	0.87 - 1.00

X0negSTnegV1_GN.ARTH.SYNF	0.05	0.31	0.96	0.93 - 1.00
PREB.FRD.FL	0.06	0.31	1.07	1.00 - 1.14
T.DN2.TH	0.06	0.31	1.06	1.00 - 1.12
X0negSTnegV1_SC.MPP34F.BM	0.06	0.31	1.07	1.00 - 1.14
X0negSTnegV1_T.DN1neg2.TH	0.06	0.33	1.06	1.00 - 1.12
DC.103neg11Bpos.LV	0.06	0.34	0.97	0.94 - 1.00
X0negSTnegV1_SC.MEP.BM	0.07	0.36	1.05	1.00 - 1.11
NK.HposMCMV1	0.07	0.36	0.86	0.74 - 1.01
X0negSTnegV1_DC.103pos11Bpos.SALM3.SI	0.07	0.36	0.95	0.89 - 1.01
T.8EFF.SP.OT1.D45VSV	0.07	0.36	0.90	0.80 - 1.01
DC.8neg4neg11Bneg.MLN	0.08	0.36	0.96	0.92 - 1.00
MLP.FL	0.08	0.36	1.06	0.99 - 1.13
TGD.VG2neg.ACT.SP	0.08	0.36	0.97	0.93 - 1.00
TGD.SP	0.08	0.36	0.97	0.94 - 1.00
PROB.CLP.FL	0.08	0.36	1.05	0.99 - 1.11
B614WABDTREG	0.09	0.36	0.95	0.90 - 1.01
DC.103pos11Bpos.SI	0.09	0.36	0.91	0.81 - 1.01
DC.103neg11Bpos.SI	0.09	0.36	0.90	0.80 - 1.02
DC2.LU	0.10	0.38	0.98	0.95 - 1.00
T.4MEM44H62L.SP	0.10	0.38	0.89	0.78 - 1.02
TGD.VG2neg.SP.TCRBKO	0.10	0.38	0.96	0.90 - 1.01
T.8EFF.SP.OT1.D10.LISOVA	0.10	0.38	0.93	0.84 - 1.02
X0negSTnegV1_MF.MEDL.SLN	0.11	0.38	0.99	0.99 - 1.00
X0negSTnegV1_DC.103neg11Bpos24pos.LU	0.11	0.38	0.99	0.97 - 1.00
DC1.SP	0.11	0.38	0.91	0.82 - 1.02
NK.SP	0.11	0.38	0.94	0.88 - 1.01
MO.6CnegIIpos.BL	0.11	0.38	0.97	0.94 - 1.01
X0negSTnegV1_GN.BL	0.11	0.38	0.96	0.91 - 1.01
X0negSTnegV1_MF.169pos11CHI.SLN	0.11	0.38	0.98	0.96 - 1.00
NKT.4neg.LV	0.11	0.38	0.94	0.88 - 1.01
MICROGLIA.CNS	0.12	0.38	0.97	0.94 - 1.01
MO.6CnegIIneg.BM	0.12	0.38	0.98	0.96 - 1.00
NKT.4neg.SP	0.12	0.38	0.94	0.86 - 1.02
X0negSTnegV1_MF.SBCAPS.SLN	0.12	0.38	0.99	0.97 - 1.00
DC.11CLOSER.SI	0.12	0.38	0.92	0.82 - 1.02
DC.8neg4neg11Bneg.SP	0.12	0.39	0.92	0.83 - 1.02
X0negSTnegV1_GN.ARTH.BM	0.12	0.39	0.95	0.90 - 1.01
DC.PDC.8neg.SP	0.13	0.40	0.95	0.88 - 1.02
X0negSTnegV1_GN.THIO.PC	0.13	0.40	0.96	0.91 - 1.01
X0negSTnegV1_GN.URAC.PC	0.13	0.40	0.96	0.90 - 1.01
DC2.SP	0.14	0.40	0.93	0.84 - 1.02
PROB.FRBC.FL	0.14	0.40	1.05	0.99 - 1.11
MO.6CposIIpos.BL	0.14	0.40	0.95	0.89 - 1.02

PROB.FRBC.BM	0.14	0.40	1.05	0.98 - 1.13
T.8EFF.SP.OT1.D8.LISOVA	0.14	0.40	0.95	0.88 - 1.02
TGD.VG2pos.SP.TCRBKO	0.14	0.40	0.97	0.93 - 1.01
NK.49Clpos.SP	0.15	0.41	0.96	0.90 - 1.02
PROB.CLP.BM	0.15	0.41	1.05	0.98 - 1.13
T.8NVE.SP	0.15	0.41	0.96	0.92 - 1.01
IMMTGD.VG2pos.TH	0.15	0.41	1.07	0.98 - 1.16
X0negSTnegV1_DC.103pos11Bneg.LU	0.16	0.41	0.94	0.87 - 1.02
DC.8neg.TH	0.16	0.42	0.96	0.91 - 1.02
MO.6CnegIIINT.BL	0.16	0.42	0.96	0.90 - 1.02
T.DN3B.TH	0.17	0.44	1.06	0.98 - 1.14
MO.6CposIIneg.BL	0.17	0.44	0.95	0.88 - 1.02
T.8EFF.SP.OT1.D15LIS	0.19	0.46	0.94	0.87 - 1.03
X0negSTnegV1_T.DN2B.TH	0.19	0.46	1.04	0.98 - 1.10
X0negSTnegV1_SC.CMP.BM.DR	0.19	0.46	1.04	0.98 - 1.11
MO.6CnegIIneg.BL	0.19	0.46	0.97	0.93 - 1.01
MO.6CposIIneg.BM	0.20	0.46	0.98	0.96 - 1.01
T.DN3neg4.TH	0.20	0.46	1.05	0.97 - 1.14
MATTGD.VG1pos.TH.B6	0.20	0.46	0.96	0.91 - 1.02
X0negSTnegV1_DC.103neg11Bpos24neg.LU	0.20	0.46	0.99	0.99 - 1.00
DC6.LN	0.20	0.46	0.98	0.95 - 1.01
NK.49CIneg.SP	0.20	0.46	0.96	0.90 - 1.02
DC.103pos11Bneg.SI	0.20	0.46	0.95	0.88 - 1.03
DC2.MLN	0.21	0.46	0.98	0.95 - 1.01
DC1.LN	0.21	0.46	0.96	0.90 - 1.02
DC.103pos11Bneg.LV	0.21	0.46	0.98	0.95 - 1.01
B.T2.SP	0.21	0.46	1.05	0.97 - 1.14
X0negSTnegV1_T.DN2A.TH	0.22	0.46	1.02	0.99 - 1.05
T.DN2neg3.TH	0.22	0.46	1.04	0.98 - 1.11
T.8EFF.SP.OT1.D8LISO	0.22	0.46	0.91	0.78 - 1.06
T.8EFF.SP.OT1.D15.LISOVA	0.23	0.46	0.97	0.93 - 1.02
NK.DAP12neg.SP	0.23	0.46	0.92	0.80 - 1.05
GN.BM	0.23	0.46	0.95	0.88 - 1.03
T.4MEM.SP	0.23	0.46	0.93	0.82 - 1.05
DC3.SP	0.23	0.46	0.98	0.95 - 1.01
FRC.MLN	0.23	0.46	0.95	0.88 - 1.03
X0negSTnegV1_T.ETP.TH	0.24	0.47	1.02	0.99 - 1.05
TGD.TH	0.24	0.47	1.06	0.96 - 1.18
MF.THIO5.IIpos480INT.PC	0.24	0.47	0.98	0.94 - 1.02
FRC.SLN	0.25	0.48	0.95	0.88 - 1.03
NK.49Hneg.SP	0.25	0.48	0.93	0.82 - 1.05
MF.LU	0.25	0.48	0.97	0.93 - 1.02
T.ISP.TH	0.25	0.48	1.04	0.97 - 1.12

T.8MEM.SP.OT1.D45.LISOVA	0.26	0.48	0.93	0.82 - 1.05
MF.RP.SP	0.26	0.48	0.93	0.82 - 1.06
T.DN3A.TH	0.27	0.49	1.05	0.96 - 1.14
EP.MECHI.TH	0.27	0.50	0.98	0.95 - 1.02
FI.SK	0.27	0.50	0.97	0.91 - 1.03
IMMTGD.VG2.E17.TH	0.28	0.50	1.05	0.96 - 1.14
T.8MEM.SP.OT1.D106.VSVOVA	0.28	0.50	0.98	0.94 - 1.02
T.8EFF.SP.OT1.D6.VSVOVA	0.28	0.50	0.96	0.90 - 1.03
T.DPBL.TH	0.29	0.51	1.04	0.97 - 1.11
NK.DAP10neg.SP	0.29	0.51	0.94	0.85 - 1.05
X0negSTnegV1_B6.14W.LN.TR	0.29	0.51	0.91	0.76 - 1.09
X0negSTnegV1_B.FO.LN	0.30	0.51	0.89	0.72 - 1.11
DC.PDC.8pos.SP	0.30	0.51	0.97	0.90 - 1.03
T.8EFF.SP.OT1.D15.VSVOVA	0.31	0.53	0.96	0.89 - 1.04
DC2.LN	0.32	0.53	0.99	0.97 - 1.01
X0negSTnegV1_T.8EFF.SP.OT1.24HR.LISOVA	0.32	0.53	1.03	0.97 - 1.10
TGD.VG2pos.ACT.SP	0.33	0.55	0.98	0.95 - 1.02
X0negSTnegV1_ST.31neg38neg44neg.SLN	0.34	0.56	0.98	0.93 - 1.03
X0negSTnegV1_DC.103pos11Bneg.SALM3.SI	0.35	0.57	0.95	0.85 - 1.06
B.FRE.BM	0.35	0.57	0.89	0.69 - 1.14
MF.THIO5.IIneg480HI.PC	0.36	0.58	0.98	0.95 - 1.02
IMMTGD.VG1posVD6pos.TH.B6	0.37	0.59	1.04	0.95 - 1.14
IMMTGD.VG1pos.TH.B6	0.38	0.60	1.04	0.95 - 1.14
MF.THIO5.IIneg480INT.PC	0.38	0.60	0.98	0.93 - 1.03
MATTGD.VG3.E17.TH	0.39	0.61	1.03	0.96 - 1.11
X0negSTnegV1_MATTGD.VG2pos.TH	0.39	0.61	1.03	0.96 - 1.10
PREB.FRC.BM	0.40	0.61	1.03	0.96 - 1.11
X0negSTnegV1_TGD.VG5pos24AHI.TH	0.40	0.61	1.03	0.96 - 1.11
DC1.MLN	0.40	0.61	0.97	0.91 - 1.04
FI.MTS15pos.TH	0.40	0.61	0.97	0.89 - 1.05
T.4.LN.BDC	0.41	0.61	0.95	0.84 - 1.07
TGD.VG5pos.ACT.IEL	0.43	0.64	0.96	0.86 - 1.07
DC.8pos.TH	0.43	0.64	0.98	0.93 - 1.03
T.4NVE.MLN	0.44	0.64	0.97	0.91 - 1.04
TGD.VG5neg.ACT.IEL	0.44	0.64	0.91	0.72 - 1.15
T.8MEM.LN	0.45	0.65	0.98	0.92 - 1.04
T.DN4.TH	0.45	0.65	1.03	0.96 - 1.10
B.T3.SP	0.45	0.65	1.03	0.96 - 1.10
B6SPLFO	0.45	0.65	1.03	0.96 - 1.11
T.8EFF.SP.OT1.D6LISO	0.46	0.65	1.01	0.98 - 1.05
X0negSTnegV1_DC.103neg11BposF4neg80LO.KD	0.46	0.65	0.98	0.91 - 1.04
T.4NVE.LN	0.46	0.65	0.96	0.85 - 1.08
T.4.PLN.BDC	0.48	0.67	0.96	0.86 - 1.08

BEC.MLN	0.50	0.69	0.95	0.84 - 1.09
X0negSTnegV1_SC.CDP.BM	0.52	0.71	0.98	0.94 - 1.03
X0negSTnegV1_T.8EFF.SP.OT1.48HR.LISOVA	0.52	0.71	1.02	0.97 - 1.07
PROB.FRA.BM	0.52	0.71	1.02	0.96 - 1.08
T.8MEM.SP.OT1.D100.LISOVA	0.52	0.71	0.95	0.83 - 1.10
T.4FP3pos25pos.SP	0.53	0.71	0.98	0.91 - 1.05
BEC.SLN	0.53	0.71	0.96	0.84 - 1.09
B1A.PC	0.53	0.71	0.92	0.70 - 1.20
X0negSTnegV1_TGD.VG3pos24AHI.E17.TH	0.55	0.72	1.02	0.95 - 1.11
X0negSTnegV1_T.8EFF.SP.OT1.12HR.LISOVA	0.56	0.73	1.03	0.94 - 1.12
T.4FP3neg.SP	0.58	0.75	0.97	0.89 - 1.07
PREB.FRD.BM	0.58	0.75	1.02	0.95 - 1.09
B.GC.SP	0.59	0.76	1.02	0.94 - 1.11
MF.THIO5.IIpos480LO.PC	0.62	0.79	0.99	0.94 - 1.04
FRA	0.62	0.79	1.01	0.96 - 1.06
B614WLNTREG	0.63	0.80	0.97	0.85 - 1.11
T.8MEM.SP	0.66	0.83	1.03	0.91 - 1.16
NK.B2Mneg.SP	0.66	0.83	0.98	0.87 - 1.09
T.8NVE.PP	0.67	0.84	0.99	0.94 - 1.04
MF.IIneg480HI.PC	0.68	0.84	0.99	0.95 - 1.04
X0negSTnegV1_SC.MDP.BM	0.69	0.85	1.01	0.96 - 1.06
NKT.44negNK1.1neg.TH	0.70	0.85	1.02	0.92 - 1.12
LEC.SLN	0.70	0.85	0.97	0.84 - 1.13
B.T1.SP	0.71	0.85	0.95	0.74 - 1.23
X0negSTnegV1_B.FO.MLN	0.72	0.86	0.95	0.71 - 1.27
T.4MEM44H62L.LN	0.72	0.86	0.98	0.88 - 1.09
T.8EFF.SP.OT1.D5.VSVOVA	0.72	0.86	0.99	0.93 - 1.05
T.8NVE.LN	0.72	0.86	0.98	0.89 - 1.08
MF.BM	0.74	0.86	0.99	0.96 - 1.03
TGD.VG2pos.SP	0.74	0.86	1.01	0.94 - 1.09
B1A.SP	0.74	0.86	0.97	0.80 - 1.17
B.FRE.FL	0.75	0.87	0.97	0.83 - 1.14
LEC.MLN	0.76	0.88	0.98	0.84 - 1.14
NK.49Hpos.SP	0.79	0.91	0.98	0.88 - 1.11
T.8EFF.SP.OT1.D10LIS	0.80	0.92	1.02	0.87 - 1.20
T.4.PA.BDC	0.82	0.92	1.01	0.92 - 1.10
T.8SP69pos.TH	0.82	0.92	0.99	0.92 - 1.07
MATTGD.VG1posVD6pos.TH.B6	0.84	0.94	0.99	0.89 - 1.09
T.4INT8pos.TH	0.84	0.94	1.01	0.93 - 1.09
NKT.4pos.LV	0.85	0.94	1.02	0.85 - 1.22
B.FO.PC	0.85	0.94	0.99	0.89 - 1.10
B.FRF.BM	0.86	0.94	0.99	0.85 - 1.15
T.4NVE.SP	0.86	0.94	1.01	0.95 - 1.07

T.4MEM.LN	0.86	0.94	0.99	0.92 - 1.07
T.8SP24neg.TH	0.86	0.94	1.01	0.92 - 1.10
T.8SP24INT.TH	0.87	0.94	1.01	0.92 - 1.11
T.4NVE.PP	0.88	0.94	1.01	0.92 - 1.10
T.8EFF.SP.OT1.D6.LISOVA	0.88	0.94	0.99	0.93 - 1.07
T.8NVE.MLN	0.89	0.94	0.99	0.88 - 1.11
T.4pos8INT.TH	0.90	0.95	1.00	0.93 - 1.08
NKT.44posNK1.1neg.TH	0.93	0.98	1.00	0.91 - 1.09
T.DPSM.TH	0.93	0.98	1.00	0.89 - 1.11
TGD.VG2neg.SP	0.94	0.98	1.00	0.93 - 1.09
B1B.PC	0.96	0.99	1.00	0.92 - 1.08
DC.IIpos480LO.PC	0.96	0.99	1.00	0.95 - 1.05
T.DP.TH	0.97	0.99	1.00	0.92 - 1.08
GMP.BM	0.97	0.99	1.00	0.96 - 1.04
B.MZ.SP	0.98	1.00	1.00	0.77 - 1.28
T.4SP24INT.TH	0.99	1.00	1.00	0.91 - 1.10
T.DP69pos.TH	0.99	1.00	1.00	0.92 - 1.09
T.4SP24neg.TH	0.99	1.00	1.00	0.92 - 1.09
T.4SP69pos.TH	1.00	1.00	1.00	0.91 - 1.09
T.8NVE.SP.OT1	1.00	1.00	1.00	0.95 - 1.05

Results from a univariate Cox PH model correlating LSSs from each murine hematopoietic cell type with patient survival. Cell types are arranged in ascending order of p-value.



**Supplementary Table S2: STRSC Multivariate Cox PH Model**

<b>Covariate</b>	<b>HR</b>	<b>95% CI</b>	<b>Z</b>	<b>P-val</b>
STRSC LSS	1.12	1.01 - 1.23	2.20	0.03
<i>FLT3</i> mutation	2.09	1.05 - 4.13	2.11	0.04
Age	1.02	0.99 - 1.04	1.48	0.14
FAB subtype	0.83	0.67 - 1.04	-1.59	0.11
Cytogenetic risk, intermediate: favorable	1.49	0.71 - 3.13	1.05	0.29
Cytogenetic risk, poor: favorable	2.94	1.09 - 7.88	2.14	0.03
Preceding malignancy	3.43	1.39 - 8.48	2.67	8.00E-03

The STRSC LSS remains predictive in a Cox PH model even after adjusting for common clinical variables including *FLT3* mutation status, age, FAB subtype, cytogenetic risk category, and preceding malignancy.

**Supplementary Table S3: Univariate Cox PH Model for Human Cell Types (GSE24006)**

<b>Name</b>	<b>P-val</b>	<b>Adj p-val</b>	<b>HR</b>	<b>95% CI</b>
HSC	1.00E-03	0.01	1.04	1.02 - 1.07
MPP	6.00E-03	0.03	1.02	1.01 - 1.04
BM.GMP	0.06	0.15	0.98	0.97 - 1.00
BM.CMP	0.14	0.29	0.99	0.98 - 1.00
MEP	0.25	0.40	0.99	0.98 - 1.01
AML.BLAST	0.65	0.78	0.99	0.96 - 1.03
AML.LSC	0.68	0.78	0.99	0.94 - 1.04
AML.LPC	0.79	0.79	0.99	0.92 - 1.07

A univariate Cox PH model reveals that the hematopoietic stem cell (HSC) and normal multipotent progenitor cell (MPP) LSSs are significantly associated with patient survival. Cell types are arranged in ascending order of p-value.

**Supplementary Table S4: Univariate Cox PH Model for Dedifferentiated Human Cell Types (GSE24759)**

<b>Name</b>	<b>P-val</b>	<b>Adj p-val</b>	<b>HR</b>	<b>95% CI</b>
Megakaryocyte.erythroid.progenitor	5.35E-03	0.02	1.09	1.03 - 1.16
Hematopoietic.stem.cell_CD38n.CD34p	0.02	0.03	1.03	1.01 - 1.06
Hematopoietic.stem.cell_CD133p.CD34dim	0.03	0.04	1.04	1.00 - 1.08
Common.myeloid.progenitor	0.59	0.59	1.00	0.99 - 1.02

A univariate Cox PH model reveals that LSSs from three out of dedifferentiated human cell types, the megakaryocyte erythroid progenitor, the CD133+ CD34 diminished HSC, and the CD38- CD34+ HSC, are significantly associated with patient survival. Cell types are arranged in ascending order of p-value.