SUPPLEMENTARY APPENDIX

Leukemia reconstitution *in vivo* is driven by cells in early cell cycle and low metabolic state

Luca Trentin,[1*] Manon Queudeville,[1] Sarah Mirjam Eckhoff,[1] Nabiul Hasan,[1***] Vera Münch,[1,2] Elena Boldrin,[1,2] Felix Seyfried,[1] Stefanie Enzenmüller,[1] Klaus-Michael Debatin[1#] and Lüder Hinrich Meyer[1#]**

[1]Department of Pediatrics and Adolescent Medicine, Ulm University Medical Center and [2]International Graduate School in Molecular Medicine, Ulm University, Germany

**Present address: Department of Woman and Child Health, University of Padova, Italy.*
***Present address: University Medical Center Tübingen, Department of Pediatrics and Adolescent Medicine, Tübingen, Germany.*
****Present address: University of Pittsburgh, Department of Neurology, Pittsburgh, PA, USA.*
#KMD and LHM contributed equally to this work.

©2018 Ferrata Storti Foundation. This is an open-access paper. doi:10.3324/haematol.2017.167502

Received: February 24, 2017.
Accepted: March 1, 2018.
Pre-published: March 8, 2018.

Correspondence: lueder-hinrich.meyer@uniklinik-ulm.de or klaus-michael.debatin@uniklinik-ulm.de

Supplementary Materials

Leukemia reconstitution in vivo is driven by cells in early cell cycle and low metabolic state

by Trentin et al.

Supplementary Table 1: Patient and xenograft characteristics

PDX ID	TTL	Sex	Age [yrs.]	Immuno-phenotype	Genetic aberrations	BFM risk group
ID01	short	F	2.1	Pro-B	*MLL* rearrangement	HR
ID02	short	F	2.6	Pre-B	*TCF3*/*PBX1* fusion, deletion *PAX5*	SR
ID03	short	M	10.7	c-ALL	deletion *CDKN2A*, *CDKN2B*, *ETV6*, *BTG1*	MR
ID04	short	M	1.4	Pre-B	deletion *IKZF1*, *CDKN2A*, *CDKN2B*, *PAX5*, *JAK2*	MR
ID05	short	M	12	c-ALL	deletion *CDKN2B*	SR
ID06	short	M	2.6	Pre-B	deletion *IKZF1*, *CDKN2A*, *CDKN2B*, *PAX5*, *JAK2*	MR
ID07	short	M	15.4	Pre-B	deletion *IKZF1*, *CDKN2A*, *PAX5*, *BTG1*	SR
ID08	short	M	0.9	Pro-B	*MLL* rearrangement	HR
ID09	short	F	8.8	c-ALL	deletion *CDKN2A*, *CDKN2B*	MR
ID10	short	M	2.7	c-ALL	*P2RY8*/*CRLF2* fusion, deletion *CDKN2A*, *CDKN2B*	HR
ID11	long	F	8	c-ALL	deletion *CDKN2A*, *CDKN2B*, *PAX5*	SR
ID12	long	M	2	c-ALL	hyperdiploidy	SR
ID13	long	F	2.6	pre-ALL	deletion *CDKN2B*	MR
ID14	long	M	16.1	c-ALL	deletion *PAX5*	SR
ID15	long	F	4.7	c-ALL	hyperdiploidy	MR
ID16	long	M	3.1	c-ALL	*ETV6*/*RUNX1* fusion, deletion *PAX5*, *ETV6*	SR
ID17	long	M	4.5	c-ALL	*ETV6*/*RUNX1* fusion, deletion *CDKN2A*, *CDKN2B*, *PAX5*	MR
ID18	long	M	7	c-ALL	*P2RY8*/*CRLF2* fusion, deletion *CDKN2A*, *CDKN2B*, *PAX5*	MR
ID19	long	F	2.1	c-ALL	hyperdiploidy, deletion *CDKN2A*, *CDKN2B*	MR
ID20	long	F	10.4	c-ALL	hyperdiploidy, deletion *ETV6*	SR

Abbreviations: PDX, patient derived xenograft; TTL, time to leukemia; F, female; M, male.
All samples were assessed for the presence of *MLL* rearrangements; *BCR*/*ABL*, *ETV6*/*RUNX1*, *P2RY8*/*CRLF2*, *IGH@*/*CRLF2*, *TCF3*/*PBX1* and *TCF3*/*HLF* fusions; deletions of *EBF1*, *IKZF1*, *CDKN2A*, *CDKN2B*, *PAX5*, *ETV6*, *BTG1*, *RB1* and *JAK2*; and diploidy.

Supplementary Table 2: The TTL signature is associated with pathways involved in cell cycle regulation

Gene sets significantly enriched with the TTL^{short} expression profile by Gene Set Enrichment Analysis (GSEA, gene set permutation analysis, NOM p-value ≤ 0.05, FDR q-value ≤ 0.05).

(NOM p val: nominal p-value; FDR q-val: false discovery rate q-value.)

Gene Set Name	NOM p-val	FDR q-val
REACTOME_ASSEMBLY_OF_THE_PRE_REPLICATIVE_COMPLEX	0.001890359	0.029282024
REACTOME_ORC1_REMOVAL_FROM_CHROMATIN	0	0.030658802
REACTOME_G1_S_TRANSITION	0	0.031060988
REACTOME_REGULATION_OF_ORNITHINE_DECARBOXYLASE_ODC	0	0.03121991
REACTOME_DNA_REPAIR	0.001930502	0.031874247
REACTOME_CYCLIN_E_ASSOCIATED_EVENTS_DURING_G1_S_TRANSITION_	0	0.031969994
REACTOME_VIF_MEDIATED_DEGRADATION_OF_APOBEC3G	0	0.032367963
REACTOME_DNA_REPLICATION	0	0.03289236
REACTOME_P53_DEPENDENT_G1_DNA_DAMAGE_RESPONSE	0.001805054	0.033051163
REACTOME_P53_INDEPENDENT_G1_S_DNA_DAMAGE_CHECKPOINT	0	0.033947907
REACTOME_CGMP_EFFECTS	0	0.034020226
REACTOME_MITOTIC_M_M_G1_PHASES	0	0.035682254
REACTOME_CDT1_ASSOCIATION_WITH_THE_CDC6_ORC_ORIGIN_COMPLEX	0	0.0365831
REACTOME_MITOCHONDRIAL_PROTEIN_IMPORT	0	0.03733434
REACTOME_S_PHASE	0	0.037911214
REACTOME_AUTODEGRADATION_OF_THE_E3_UBIQUITIN_LIGASE_COP1	0.001901141	0.038285587
REACTOME_CDK_MEDIATED_PHOSPHORYLATION_AND_REMOVAL_OF_CDC6	0.001845019	0.039208986
REACTOME_SYNTHESIS_OF_DNA	0	0.039313223
REACTOME_APC_C_CDH1_MEDIATED_DEGRADATION_OF_CDC20_AND_OTHER_APC_C_CDH1_TARGETED_PROTEINS_IN_LATE_MITOSIS_EARLY_G1	0	0.040534902
REACTOME_RESPIRATORY_ELECTRON_TRANSPORT	0.001996008	0.041820854
REACTOME_AUTODEGRADATION_OF_CDH1_BY_CDH1_APC_C	0.001945525	0.042242102
REACTOME_REGULATION_OF_MITOTIC_CELL_CYCLE	0	0.047006056
REACTOME_G2_M_CHECKPOINTS	0.001980198	0.049141534

Supplementary Table 3: Distinct engraftment activities of cell cycle annotated subfractions

Times to engraftment as estimated in days after transplantation of cell cycle annotated, sorted cellular subfractions, control sorted cells (Ctrl sort, exposed to the identical sorting procedure without sorting), unsorted cells (Ctrl unsort, "transplantation control", performed if cells available). Two recipients deceased without detection of leukemia engraftment (*).

Sample	Gate	N	Deaths not due to leukemia	Events	Time to engraftment (days/recipient)
ID04 (TTL^{short}), Replicate #1	Ctrl sort	3	-	3	49, 57, 70
	$G1b^{high}$	3	-	3	78, 78, 78
	$G1b^{low}$	3	-	3	57, 57, 57
	G1a	3	-	3	70, 70, 70
	G2/M	3	-	3	78, 84, 84
ID04 (TTL^{short}), Replicate #2	Ctrl sort	3	-	3	37, 37, 37
	Ctrl unsort	2	-	2	30, 30
	$G1b^{high}$	4	-	4	37, 44, 44, 44
	$G1b^{low}$	4	-	4	37, 37, 37, 44
	G1a	4	-	4	37, 37, 37,44
	G2/M	4	-	4	44, 44, 44, 44
ID12 (TTL^{long})	Ctrl sort	3	-	3	134, 148, 155
	Ctrl unsort	3	-	3	93, 93, 100
	$G1b^{high}$	3	1*	2	141, 155
	$G1b^{low}$	3	-	3	120, 127, 141
	G1a	3	1*	2	141, 162
	G2/M	3	-	3	148, 155, 162
ID04 (TTL^{short}), secondary transplantation	$G1b^{low}$	3	-	3	47, 47, 47
	G1a	3	-	3	51, 52, 52
	G2/M	2	-	2	55, 56

Supplementary Table 4: Gene expression signature associated with ALL initiating activity

Differentially regulated genes (1122 probe sets, 865 genes) between G1b^{low} and G2/M leukemia cells (Shrinkage t-statistic, FDR q-val <0.05); m.e., mean expression; FC, fold change. Probe sets down-regulated in G1b^{low} annotated cells (731 probe sets, 535 genes) display a FC below, probe sets up-regulated (391 probe sets, 330 genes) a FC above 1.

probe set	gene symbol	q-value	m.e. G1b^{low}	m.e. G2/M	FC
201896_s_at	*PSRC1*	9.05E-14	4.256276257	8.315811892	0.511829309
228252_at	*PIF1*	9.05E-14	4.735039422	8.33151266	0.5683289
204709_s_at	*KIF23*	9.05E-14	5.003568236	8.755021944	0.57150836
232238_at	*ASPM*	9.05E-14	4.908311404	8.307002195	0.590864344
235545_at	*DEPDC1*	9.05E-14	5.180966474	8.747347676	0.592289991
203764_at	*DLGAP5*	9.05E-14	6.518551686	10.71796414	0.608189354
230469_at	*RTKN2*	0.001900526	2.997788259	4.883555884	0.613853579
204317_at	*NA*	9.05E-14	4.768887305	7.678215806	0.621093158
211080_s_at	*NEK2*	9.05E-14	5.815162964	9.302518076	0.625117083
236641_at	*KIF14*	9.05E-14	6.173914823	9.808181794	0.629465782
237469_at	*TOP2A*	9.05E-14	3.843645987	6.08932343	0.631210681
220295_x_at	*DEPDC1*	9.05E-14	5.375515724	8.46403989	0.635100471
209172_s_at	*CENPF*	9.05E-14	6.115510868	9.622941494	0.63551367
231534_at	*CDK1*	6.85E-10	3.763950162	5.916926975	0.636132604
204962_s_at	*NA*	9.05E-14	6.288066128	9.883652521	0.636208741
215942_s_at	*GTSE1*	9.05E-14	5.439833111	8.5016448	0.63985655
232278_s_at	*DEPDC1*	9.05E-14	5.927357419	9.251276385	0.640706987
229538_s_at	*IQGAP3*	9.05E-14	5.399170465	8.375692117	0.644623798
202954_at	*UBE2C*	9.05E-14	7.289542776	11.28923733	0.645707284
222958_s_at	*DEPDC1*	9.05E-14	6.014331079	9.195894823	0.654023474
206364_at	*KIF14*	9.05E-14	6.614058257	10.03823476	0.658886588
219148_at	*PBK*	0.00183907	5.861263442	8.819563809	0.664575207
239002_at	*ASPM*	1.16E-10	5.569529672	8.358233471	0.666352488
226980_at	*DEPDC1B*	9.05E-14	6.832162251	10.21576881	0.668785911
204318_s_at	*GTSE1*	9.05E-14	6.418582906	9.567299942	0.670887601
203418_at	*CCNA2*	9.05E-14	6.351533521	9.453707181	0.671856384
223307_at	*CDCA3*	9.05E-14	6.36144522	9.453153629	0.672944233
1558750_a_at	*NA*	1.52E-10	5.65271244	8.396699021	0.67320651
221436_s_at	*CDCA3*	9.05E-14	6.245474999	9.244304631	0.675602465
202870_s_at	*CDC20*	9.05E-14	7.598452743	11.2326069	0.676463871
228729_at	*CCNB1*	6.62E-07	6.204474229	9.16098022	0.677271873
241838_at	*NA*	4.15E-09	5.504589731	8.117134799	0.678144427
204315_s_at	*GTSE1*	9.05E-14	5.406062159	7.951215952	0.679903827
202240_at	*PLK1*	9.05E-14	5.050630428	7.424917193	0.680227172
1552682_a_at	*CASC5*	8.65E-09	4.987065056	7.309425652	0.682278649
204649_at	*TROAP*	9.05E-14	6.253159296	9.142071177	0.683998098
218355_at	*KIF4A*	9.05E-14	7.232613896	10.5584671	0.685006055
221591_s_at	*FAM64A*	9.05E-14	6.548293238	9.540481561	0.686369257
202094_at	*BIRC5*	9.05E-14	6.170510822	8.9869555	0.686607475
209464_at	*AURKB*	9.05E-14	7.107143735	10.30104734	0.689943799

204641_at	*NEK2*	9.05E-14	7.353261151	10.64473324	0.690788673
217010_s_at	*CDC25C*	1.76E-06	3.826659617	5.528594248	0.692157797
219918_s_at	*ASPM*	9.05E-14	8.102940284	11.70112084	0.692492659
1569061_at	*IQGAP3*	9.05E-14	3.23289036	4.618854093	0.699933424
205406_s_at	*SPA17*	2.53E-12	3.87805803	5.539945701	0.700017336
222039_at	*KIF18B*	9.05E-14	7.261026039	10.36285829	0.700677925
201291_s_at	*TOP2A*	9.05E-14	9.022351241	12.86128327	0.70151252
229490_s_at	*NA*	9.05E-14	4.753844832	6.764024949	0.702813025
210334_x_at	*BIRC5*	9.05E-14	7.002746225	9.909129482	0.706696409
204492_at	*ARHGAP11A*	0.000247962	4.917431085	6.956728688	0.70685969
210052_s_at	*TPX2*	9.05E-14	7.239369356	10.20665911	0.709279038
201292_at	*TOP2A*	9.05E-14	9.100057624	12.82568463	0.709518274
217640_x_at	*SKA1*	1.77E-13	5.518972707	7.763031445	0.710930098
209709_s_at	*HMMR*	9.05E-14	7.554123523	10.60357085	0.71241317
223381_at	*NUF2*	9.05E-14	7.472310268	10.46878108	0.713770802
229610_at	*CKAP2L*	9.05E-14	5.725951674	7.953863659	0.719895628
223759_s_at	*GSG2*	9.05E-14	5.205577665	7.223646665	0.720630162
239219_at	*AURKB*	3.13E-11	4.695875238	6.506249131	0.721748452
244427_at	*KIF23*	7.24E-08	3.981431848	5.505128489	0.723222329
218755_at	*KIF20A*	9.05E-14	7.047524287	9.741914251	0.723422944
202095_s_at	*BIRC5*	9.05E-14	8.008843042	11.05373885	0.724537023
209891_at	*SPC25*	3.17E-08	5.72011043	7.893752816	0.724637642
241569_at	*NA*	1.05E-06	3.223778306	4.437831996	0.726430903
219502_at	*NEIL3*	0.001996654	5.80953798	7.987409878	0.727336905
236852_at	*FBXO43*	5.52E-06	5.761481562	7.912158718	0.728180736
243229_at	*NA*	2.36E-08	5.270731254	7.236948513	0.728308519
219787_s_at	*ECT2*	9.05E-14	6.915295697	9.449624528	0.731806399
1555826_at	*BIRC5*	9.05E-14	5.020353917	6.858154903	0.732026906
212023_s_at	*MKI67*	9.05E-14	6.939777094	9.467944587	0.7329761
207165_at	*HMMR*	9.05E-14	8.502445507	11.58649277	0.733823917
212020_s_at	*MKI67*	9.05E-14	6.516603066	8.876140887	0.734170756
207331_at	*CENPF*	2.88E-06	3.149857347	4.28683146	0.734775177
242787_at	*NA*	9.05E-14	6.994701464	9.490335731	0.737034143
227928_at	*PARPBP*	4.12E-07	6.069058274	8.232959305	0.737166072
1569958_at	*DEPDC1-AS1*	0.000664462	2.905310759	3.933829298	0.738545203
207746_at	*POLQ*	0.000921464	4.643478645	6.26910268	0.740692709
218542_at	*CEP55*	9.05E-14	7.794432245	10.52027788	0.740896042
232398_at	*CCDC150*	0.001736244	5.976711954	8.066396992	0.740939475
209642_at	*BUB1*	9.05E-14	7.450258914	10.03805758	0.742201253
218726_at	*HJURP*	9.05E-14	7.117718669	9.583055266	0.742740021
214710_s_at	*CCNB1*	3.46E-05	7.520334225	10.11068034	0.743801008
233115_at	*NA*	6.12E-10	3.393489883	4.562249373	0.743819464
207828_s_at	*CENPF*	9.05E-14	8.434396962	11.32991522	0.744436017
213226_at	*CCNA2*	9.05E-14	7.721258135	10.36978959	0.744591592
211519_s_at	*KIF2C*	9.05E-14	6.769770044	9.071647745	0.746255833
225834_at	*NA*	9.05E-14	8.115899561	10.8357559	0.748992468
210821_x_at	*CENPA*	9.05E-14	6.431720689	8.579214273	0.74968645
1553810_a_at	*KIAA1524*	0.000594932	4.841663329	6.45028849	0.750611905
205046_at	*CENPE*	9.05E-14	8.305476486	11.05628025	0.751199888
230522_s_at	*ARHGEF39*	0.001278577	3.968359743	5.280627267	0.751494007
205167_s_at	*CDC25C*	1.42E-09	5.63580654	7.499158585	0.751525185

212022_s_at	*MKI67*	9.05E-14	7.32762308	9.731921107	0.752947234
1569062_s_at	*IQGAP3*	0.000332187	3.790741768	5.030620805	0.753533593
225300_at	*KNSTRN*	1.20E-07	6.441939681	8.543937828	0.753977827
215509_s_at	*BUB1*	1.53E-07	6.605753125	8.751513605	0.754812644
235425_at	*SGOL2*	9.05E-14	6.345201108	8.391118554	0.756180605
207390_s_at	*SMTN*	0.002314361	5.239531342	6.926623257	0.756433712
232362_at	*CCDC18*	7.07E-11	5.340445487	7.056678342	0.756793101
212021_s_at	*MKI67*	9.05E-14	7.441487415	9.822390291	0.757604534
214804_at	*CENPI*	0.002229972	5.269558865	6.940256288	0.759274391
1555758_a_at	*CDKN3*	9.05E-14	8.201062822	10.77862557	0.760863504
203214_x_at	*CDK1*	5.14E-10	8.72184739	11.45797585	0.761203157
243368_at	*NA*	0.000203707	4.773339706	6.263550557	0.762082091
228273_at	*PRR11*	9.05E-14	9.346766709	12.2605621	0.762344062
37577_at	*ARHGAP19*	9.05E-14	7.53903988	9.875706389	0.763392469
209714_s_at	*CDKN3*	9.05E-14	8.01372141	10.47667363	0.764910858
230165_at	*SGOL2*	9.05E-14	7.360987783	9.621380993	0.765065617
220060_s_at	*PARPBP*	5.96E-07	6.6662356	8.690385589	0.767081683
202580_x_at	*FOXM1*	9.05E-14	6.769120239	8.822767579	0.767233204
38158_at	*ESPL1*	9.05E-14	7.189981512	9.371210632	0.76724148
205240_at	*GPSM2*	4.84E-05	7.007172098	9.128598713	0.767606543
1558706_a_at	*ATOH8*	1.64E-07	3.881307999	5.054593633	0.767877357
219306_at	*KIF15*	1.80E-10	7.511627678	9.778747833	0.76815844
1557029_at	*HMMR-AS1*	2.24E-05	3.62267846	4.71204632	0.76881215
210559_s_at	*CDK1*	1.16E-12	9.128813974	11.84666336	0.770581023
221922_at	*GPSM2*	2.88E-06	7.278890444	9.44112312	0.770977176
236957_at	*CDCA2*	0.000203773	6.379917889	8.268812978	0.771563936
207590_s_at	*CENPI*	0.000179164	5.107880299	6.617726595	0.771848191
1568596_a_at	*TROAP*	9.05E-14	7.068784938	9.138511437	0.773516014
207231_at	*DZIP3*	4.01E-06	4.300642796	5.553843272	0.774354368
202705_at	*CCNB2*	9.05E-14	8.812653365	11.37623683	0.774654528
1552680_a_at	*CASC5*	0.000772696	6.181305014	7.97699747	0.774891184
1553652_a_at	*C18orf54*	0.004012672	3.424809095	4.419170916	0.774989056
233058_at	*GPSM2*	2.61E-13	5.147138177	6.631710608	0.776140348
212801_at	*NA*	9.05E-14	7.540976194	9.702982862	0.777181234
218663_at	*NCAPG*	9.05E-14	8.195331517	10.54443574	0.777218594
204162_at	*NDC80*	9.11E-06	7.150728581	9.197300096	0.777481272
1552619_a_at	*ANLN*	7.91E-06	6.73081776	8.634651187	0.77951241
228323_at	*CASC5*	4.47E-07	8.075821204	10.35014226	0.780261855
201774_s_at	*NCAPD2*	9.05E-14	7.698020262	9.863847371	0.780427755
218308_at	*TACC3*	9.05E-14	7.753177788	9.92950191	0.780822428
241733_at	*C18orf54*	5.96E-09	4.447801059	5.69028876	0.781647689
236619_at	*NA*	0.028945979	5.557846602	7.105632991	0.782174735
1553789_a_at	*C21orf58*	2.48E-08	5.322126069	6.803325837	0.782282989
201927_s_at	*PKP4*	5.88E-06	5.67817665	7.241616812	0.784103439
204817_at	*ESPL1*	9.05E-14	7.497582797	9.558142196	0.78441842
1554489_a_at	*CEP70*	9.05E-14	6.681677515	8.513700738	0.784814703
201853_s_at	*CDC25B*	9.05E-14	8.177038043	10.3876581	0.78718783
222608_s_at	*ANLN*	7.65E-11	7.431838554	9.437440469	0.787484549
1555278_a_at	*CKAP5*	9.05E-14	7.826678639	9.936861979	0.787640873
231855_at	*KIAA1524*	1.30E-05	6.172258911	7.827812173	0.788503706
226661_at	*CDCA2*	5.99E-10	7.58168246	9.60927709	0.788996133

240247_at	*NA*	9.05E-14	6.530810192	8.277321604	0.789000416
221031_s_at	*APOLD1*	3.88E-07	6.688609107	8.45764301	0.790836064
209408_at	*KIF2C*	9.05E-14	8.439069605	10.66776132	0.791081592
224150_s_at	*CEP70*	5.92E-13	7.016857019	8.85907397	0.792053102
244640_at	*ZNF850*	5.14E-07	5.406674439	6.810816646	0.79383644
203213_at	*CDK1*	9.05E-14	9.864545568	12.41769098	0.794394512
203636_at	*MID1*	0.026167035	4.525400041	5.692562368	0.794967143
212738_at	*ARHGAP19*	9.05E-14	8.365719842	10.52332659	0.794969136
221258_s_at	*KIF18A*	0.001668031	6.701324965	8.415542791	0.796303356
218009_s_at	*PRC1*	9.05E-14	8.814161399	11.06331387	0.796701739
234992_x_at	*ECT2*	1.65E-06	6.119665415	7.670929251	0.797773675
219769_at	*INCENP*	2.76E-06	6.212187349	7.774815536	0.799014114
213186_at	*DZIP3*	9.05E-14	6.938132549	8.676005956	0.799691999
204826_at	*CCNF*	9.05E-14	6.835911656	8.536712476	0.800766299
212949_at	*NCAPH*	8.09E-11	7.774115911	9.708070299	0.800789
227165_at	*SKA3*	9.05E-14	6.905759114	8.61365994	0.801721819
204092_s_at	*AURKA*	4.68E-09	7.48533789	9.31834942	0.803290106
218662_s_at	*NCAPG*	9.05E-14	8.930084739	11.07377207	0.806417604
206942_s_at	*PMCH*	7.48E-07	4.637947877	5.74357191	0.807502361
230002_at	*NA*	9.05E-14	6.405282953	7.923104341	0.808430973
221520_s_at	*CDCA8*	0.001667159	7.943624251	9.798206909	0.81072224
208079_s_at	*AURKA*	9.67E-11	7.808848805	9.623114551	0.811467926
204444_at	*KIF11*	1.62E-09	8.386518655	10.33120135	0.811766064
244324_at	*C18orf54*	0.021799568	6.356186465	7.826292882	0.812158012
201929_s_at	*PKP4*	2.10E-08	6.566909804	8.082246968	0.812510411
232596_at	*DIAPH3*	0.008966331	5.768779392	7.096754644	0.812875699
219262_at	*SUV39H2*	2.22E-05	5.348669122	6.579587472	0.812918613
203145_at	*SPAG5*	9.05E-14	8.246363287	10.12082261	0.814791801
204825_at	*MELK*	0.003600081	7.703834728	9.454401153	0.81484111
222118_at	*CENPN*	9.05E-14	6.154192067	7.539380319	0.81627293
1554019_s_at	*CEP57L1*	0.00146294	4.557906368	5.57121573	0.818117012
212832_s_at	*CKAP5*	9.05E-14	8.199682023	10.01336021	0.818874169
238508_at	*DBF4B*	9.05E-14	5.260353317	6.419208021	0.819470767
1569190_at	*SCLT1*	0.000470095	5.848432932	7.135178021	0.81966181
213599_at	*OIP5*	0.03122071	7.048036051	8.590933774	0.820403956
204822_at	*TTK*	7.39E-09	7.832586323	9.529158367	0.821959928
1553690_at	*SGOL1*	9.05E-14	4.884186083	5.935935271	0.822816601
205072_s_at	*XRCC4*	0.039328353	4.913355111	5.961888392	0.824127321
225777_at	*SAPCD2*	9.05E-14	7.103228238	8.604328442	0.825541271
204827_s_at	*CCNF*	0.004445532	5.333346933	6.458837422	0.825744106
215215_s_at	*LOC81691*	0.016077771	5.926360809	7.173205197	0.826180298
219978_s_at	*NUSAP1*	2.42E-05	9.068172252	10.97113477	0.82654825
225687_at	*FAM83D*	9.79E-06	7.763321128	9.377076965	0.827904171
228530_at	*MZT1*	4.87E-11	5.292454765	6.386521818	0.828691253
222077_s_at	*RACGAP1*	9.05E-14	9.071670703	10.94373877	0.828937065
216969_s_at	*KIF22*	7.77E-11	7.123250521	8.589677129	0.829280358
1557756_a_at	*CEP128*	0.026579675	5.298922611	6.370010267	0.831854642
235506_at	*NA*	0.012433684	3.90029391	4.688133025	0.83195035
203755_at	*BUB1B*	0.001515497	8.479332276	10.17730182	0.833161129
209680_s_at	*KIFC1*	9.05E-14	6.931466872	8.319112072	0.83319792
226533_at	*HINT3*	0.00261987	4.531456313	5.417136247	0.836504032

228281_at	*DDIAS*	0.002340502	7.271084294	8.688161608	0.836895608
201897_s_at	*CKS1B*	9.05E-14	10.10971699	12.07968956	0.836918609
219555_s_at	*CENPN*	9.05E-14	8.67688418	10.36730822	0.836946679
226308_at	*HAUS8*	0.000748147	5.981359007	7.137596398	0.838007457
236312_at	*MAD2L1*	0.005146134	6.458895227	7.705022997	0.838270727
224753_at	*CDCA5*	0.000378638	8.242054591	9.830930547	0.838379902
236487_at	*SCLT1*	0.000663813	7.130813494	8.500198336	0.83889966
219036_at	*CEP70*	9.05E-14	7.204112627	8.587146379	0.838941403
229097_at	*DIAPH3*	0.001128044	7.218615401	8.596561738	0.839709598
201928_at	*PKP4*	1.37E-06	7.620854298	9.069914011	0.84023446
219990_at	*E2F8*	0.00245389	7.002848414	8.324596689	0.841223746
218365_s_at	*DARS2*	0.001844793	6.060671521	7.200800192	0.841666392
228559_at	*CENPN*	5.90E-08	7.685829408	9.131159359	0.841714519
208107_s_at	*LOC81691*	0.008742768	6.4459424	7.652153682	0.8423697
207232_s_at	*DZIP3*	1.40E-12	6.050956144	7.176962299	0.843108253
224947_at	*RNF26*	3.96E-08	6.735254523	7.973841439	0.84466873
220840_s_at	*C1orf112*	0.021470764	5.996323496	7.092854714	0.845403401
238154_at	*CEP70*	9.05E-14	6.60928422	7.813454114	0.845885075
1554271_a_at	*CENPL*	0.004345026	6.639888454	7.831677221	0.84782458
229442_at	*C18orf54*	1.26E-10	7.584172456	8.943836875	0.847977502
212125_at	*RANGAP1*	9.05E-14	6.759784939	7.968432105	0.848320579
1555591_at	*PIF1*	0.030087924	2.660710316	3.135080272	0.848689694
218039_at	*NUSAP1*	9.05E-14	10.2925228	12.11949923	0.849253142
209427_at	*SMTN*	0.000626404	6.072482688	7.140860564	0.850385277
234944_s_at	*MTFR2*	0.042968046	5.817128594	6.818132214	0.853185068
228069_at	*MTFR2*	0.001579977	6.972484031	8.171915648	0.853225159
1553697_at	*CCSAP*	0.048715638	4.112725909	4.817929555	0.853629316
204033_at	*TRIP13*	0.000456635	7.704345303	9.016108335	0.854508954
203270_at	*DTYMK*	9.05E-14	6.937182539	8.105779011	0.855831689
1553535_a_at	*RANGAP1*	9.05E-14	6.838989942	7.97274416	0.857796237
1569495_at	*SCLT1*	0.00253383	4.04870929	4.717646617	0.858205292
202183_s_at	*KIF22*	9.05E-14	8.526299378	9.934366983	0.858262977
236976_at	*FANCA*	0.014977966	6.102356896	7.100029371	0.859483331
224180_x_at	*WDPCP*	0.000203828	6.212990325	7.225781673	0.859836431
210813_s_at	*XRCC4*	0.010995499	6.065662063	7.048585261	0.860550286
219544_at	*BORA*	4.33E-07	6.794482443	7.893428138	0.860777133
229128_s_at	*ANP32E*	1.65E-07	8.144700042	9.459505211	0.861006983
232754_at	*NA*	0.001011451	5.692205297	6.609811158	0.861175177
220652_at	*KIF24*	0.002084967	3.048035623	3.536836316	0.861797197
1554768_a_at	*MAD2L1*	0.036002201	9.462539296	10.97817639	0.861940905
235572_at	*SPC24*	0.004009759	6.831942565	7.90673884	0.864065793
208103_s_at	*ANP32E*	9.05E-14	8.865041435	10.25242611	0.864677428
210416_s_at	*CHEK2*	0.013862816	7.551246632	8.72820355	0.865154735
239515_at	*NA*	4.56E-08	3.570147602	4.11916574	0.866716182
211543_s_at	*GRK6*	2.50E-11	6.199243375	7.150608698	0.866953239
222809_x_at	*CCDC85C*	7.17E-08	6.55211389	7.555540135	0.867193314
213644_at	*CEP112*	0.020155369	5.548110977	6.3930929	0.867828931
209113_s_at	*HMG20B*	1.38E-11	7.768744729	8.945006081	0.868500777
1554356_at	*GINS4*	0.000894715	5.583620304	6.427381954	0.868723898
203362_s_at	*MAD2L1*	0.003421497	10.12852794	11.63076004	0.870839731
208511_at	*PTTG3P*	0.000207783	8.129015803	9.327060005	0.871551786

228697_at	*HINT3*	0.000670187	7.217824418	8.28030798	0.871685502
1557755_at	*CEP128*	0.042591625	5.267090173	6.041153964	0.871868223
226936_at	*CENPW*	0.000100428	9.562950747	10.96787631	0.871905415
214557_at	*PTTG2*	0.005069324	3.476587364	3.98663087	0.872061517
205339_at	*STIL*	2.38E-07	8.048321039	9.220127785	0.872907754
221685_s_at	*SPDL1*	9.22E-05	8.417587909	9.643147188	0.872908786
235039_x_at	*LIN9*	0.036816413	6.281216853	7.195203313	0.87297281
229926_at	*MIR3682*	9.60E-07	5.733652278	6.567529755	0.873030271
226488_at	*RCCD1*	5.61E-10	7.899320728	9.043150086	0.873514279
220668_s_at	*DNMT3B*	0.018949643	7.78618443	8.910780082	0.873793805
231938_at	*SGOL1*	1.77E-13	5.800797534	6.631204001	0.874772897
221250_s_at	*MXD3*	4.77E-08	7.886788275	9.01120459	0.875220199
225686_at	*SKA2*	0.000435993	7.599902984	8.676561866	0.875911807
230981_at	*CATSPER3*	6.53E-05	4.063059707	4.636935009	0.876238226
238757_at	*DBF4B*	0.005097326	4.901137577	5.59208763	0.876441483
204407_at	*TTF2*	0.000657276	7.951186158	9.070156392	0.876631649
214264_s_at	*EFCAB11*	0.002286468	6.511375007	7.424711162	0.876986978
218073_s_at	*NDC1*	0.004955607	7.383033145	8.418175	0.877034885
212127_at	*RANGAP1*	1.26E-11	6.855152435	7.811719997	0.877547126
238022_at	*CRNDE*	5.45E-08	8.22529283	9.36735274	0.878080826
219294_at	*CENPQ*	7.97E-06	7.120021316	8.108320008	0.878113013
234749_s_at	*POC1A*	0.000175301	5.498586415	6.253908205	0.879224036
213329_at	*NA*	0.001459893	6.709053379	7.627575275	0.879578783
229886_at	*C5orf34*	0.004464983	6.221874465	7.072029263	0.879786301
211762_s_at	*KPNA2*	2.61E-13	10.74800701	12.21389095	0.879982231
1568873_at	*ZNF519*	0.000496804	6.780830513	7.69681316	0.88099196
226118_at	*CENPO*	0.005621014	6.833562836	7.756484795	0.881012858
202904_s_at	*LSM5*	0.017921368	6.333311467	7.187225891	0.881189984
224338_s_at	*RNF26*	5.68E-08	5.323402212	6.040551425	0.881277525
227270_at	*FAM200B*	0.001690552	6.118990838	6.939183894	0.881802663
1553984_s_at	*DTYMK*	9.05E-14	8.323948404	9.4370602	0.882048883
232095_at	*NA*	0.001862517	6.521844937	7.393934099	0.882053431
210719_s_at	*HMG20B*	5.11E-13	8.960191508	10.15319102	0.882500043
229204_at	*HP1BP3*	1.40E-06	6.745711642	7.641534493	0.882769246
213365_at	*ERI2*	0.008320986	6.870019648	7.782341781	0.882770231
1554894_a_at	*PCBD2*	0.004430609	6.664064655	7.543037727	0.883472269
227212_s_at	*PHF19*	0.046381682	7.75713553	8.773107562	0.884194737
220935_s_at	*CDK5RAP2*	1.13E-05	7.737294767	8.749654675	0.884297158
235441_at	*NA*	0.031680561	5.584124869	6.311420028	0.88476521
1554251_at	*HP1BP3*	3.72E-05	8.784470808	9.928278984	0.884792905
234863_x_at	*FBXO5*	4.80E-05	8.088983917	9.138844172	0.885121112
219493_at	*SHCBP1*	0.00281908	8.910950388	10.05578002	0.88615208
220744_s_at	*IFT122*	0.000448523	6.730024062	7.590285473	0.886662838
1564856_s_at	*NA*	0.006456171	2.687928708	3.030230211	0.887037789
218875_s_at	*FBXO5*	1.45E-05	8.181004314	9.210889891	0.888188265
235712_at	*GAS5-AS1*	0.000569652	3.602404929	4.054654407	0.888461646
220633_s_at	*HP1BP3*	0.000255161	8.246896341	9.281858618	0.888496225
226355_at	*POC1A*	0.001528911	6.743964847	7.587175743	0.888863666
210527_x_at	*NA*	9.05E-14	7.205755633	8.103350015	0.889231691
240379_at	*PKP4*	0.015244939	4.398642493	4.939949095	0.890422636
211040_x_at	*GTSE1*	9.05E-14	8.991152801	10.09217446	0.890903426

232114_at	*MED12L*	2.25E-05	3.615806945	4.056381186	0.891387367
222424_s_at	*NUCKS1*	9.05E-14	8.101613337	9.082347131	0.892017583
239169_at	*RDM1*	5.35E-09	5.694292942	6.380284824	0.892482561
219879_s_at	*C17orf53*	9.34E-05	6.140172071	6.878467639	0.892665691
222027_at	*NUCKS1*	0.00068702	5.772366433	6.466083331	0.892714513
219588_s_at	*NCAPG2*	2.19E-06	7.861883752	8.802969704	0.893094492
205235_s_at	*KIF20B*	1.81E-05	8.463232641	9.475973914	0.893125363
202903_at	*LSM5*	0.029660128	6.142623635	6.876718264	0.89324928
216275_at	*BUB1*	1.56E-10	5.157595532	5.77388176	0.893263102
201714_at	*TUBG1*	0.000113226	7.451186179	8.340981208	0.893322499
219105_x_at	*ORC6*	5.13E-08	9.592906109	10.73444494	0.893656464
203432_at	*TMPO*	0.000138577	9.397870211	10.50931526	0.894241916
226380_at	*PTPN21*	0.001310864	3.177902121	3.547959896	0.895698433
229671_s_at	*MIS18A*	0.046274018	4.95683057	5.531771986	0.896065598
212320_at	*TUBB*	2.21E-11	11.71981744	13.07520621	0.896339014
209026_x_at	*TUBB*	9.05E-14	11.74613889	13.10406309	0.896373805
1570523_s_at	*ATG10*	0.023256726	5.375538396	5.996892173	0.896387369
217125_at	*NA*	0.020954372	5.760213652	6.421515583	0.89701778
237572_at	*UGT3A1*	0.036966739	3.714630402	4.140212429	0.897207683
225836_s_at	*RHNO1*	0.000556154	6.811073964	7.591125016	0.897241707
1554572_a_at	*SUV39H2*	2.55E-09	8.134331994	9.065510828	0.897283358
223932_at	*NA*	0.005778787	5.168969237	5.759812218	0.897419749
228558_at	*C14orf80*	9.05E-14	6.240339509	6.952476735	0.897570714
219650_at	*ERCC6L*	0.030870928	7.230803714	8.052502471	0.897957342
221505_at	*ANP32E*	9.05E-14	10.52873555	11.71958519	0.898388072
216856_s_at	*DLEU2*	0.040492873	3.621480663	4.028647676	0.898932087
232475_at	*TICRR*	0.006368078	5.154429451	5.732018826	0.899234564
230900_at	*CCDC110*	0.031028317	2.601094382	2.89130579	0.89962618
222777_s_at	*WHSC1*	4.50E-08	7.80332569	8.673735227	0.899649976
230483_at	*NA*	4.39E-07	5.829087065	6.477580354	0.899886493
214874_at	*PKP4*	0.027480322	5.146819027	5.718859892	0.899972919
244033_at	*CEP128*	0.032326596	7.859719619	8.732475411	0.900056313
233540_s_at	*CDK5RAP2*	0.007446482	8.599846287	9.554546544	0.900078957
233110_s_at	*BCL2L12*	0.001419152	7.223273159	8.020564109	0.900594155
212897_at	*CDK19*	1.06E-05	7.741680334	8.595107663	0.900707779
1555197_a_at	*C21orf58*	3.81E-08	5.339000859	5.926288227	0.900901315
229048_at	*NA*	0.001019076	3.789835885	4.205075684	0.901252717
237058_x_at	*SLC6A13*	0.017271098	3.546714613	3.934999247	0.90132536
213253_at	*SMC2*	0.002363585	8.179308512	9.071861171	0.90161306
243508_at	*C20orf196*	0.000553631	4.902830871	5.436883591	0.901772272
232065_x_at	*CENPL*	0.017457818	6.673930519	7.399395169	0.901956223
201457_x_at	*BUB3*	3.96E-07	10.84765132	12.02053661	0.902426545
241551_at	*NA*	0.003716181	4.258971419	4.71736742	0.902828006
221078_s_at	*CCDC88A*	1.82E-06	6.872824058	7.611921656	0.902902627
1562253_at	*SLC7A11-AS1*	0.002654927	3.273118468	3.624634642	0.903020247
244250_at	*ANXA6*	0.012390692	4.148306578	4.593784368	0.903025969
37232_at	*KIAA0586*	0.01354246	5.739962814	6.355893558	0.903092974
212715_s_at	*MICAL3*	0.000576187	6.879069399	7.61508615	0.903347548
211714_x_at	*TUBB*	9.05E-14	12.25734933	13.55781124	0.904080247
216323_x_at	*NA*	2.24E-06	8.097245915	8.952761142	0.904441187
242631_x_at	*DLC1*	0.023404267	2.917712183	3.224644701	0.90481664

209052_s_at	*WHSC1*	0.000211091	6.878803091	7.601345976	0.904945402
217123_x_at	*PMCHL1*	0.003884026	3.070778338	3.393188968	0.904983002
232197_x_at	*ARSB*	0.00454497	5.089567535	5.622678191	0.905185636
224592_x_at	*HP1BP3*	8.01E-10	9.811618906	10.83477831	0.905567113
228646_at	*PPP1R1C*	0.002842613	3.54714822	3.915717894	0.905874303
221611_s_at	*PHF7*	0.024695328	4.670762832	5.155415703	0.905991505
218252_at	*CKAP2*	0.000362601	9.600199742	10.59146099	0.906409394
1570584_at	*MPZL3*	0.027456447	2.52229933	2.782300663	0.906551676
225362_at	*FAM122B*	1.83E-07	8.333484142	9.189541288	0.906844409
226287_at	*CCDC34*	2.08E-06	8.372769272	9.228982865	0.907225573
203554_x_at	*PTTG1*	7.82E-05	11.44276448	12.60630567	0.907701652
216952_s_at	*LMNB2*	0.040673486	7.686236288	8.466614181	0.907828811
206129_s_at	*ARSB*	0.014863327	4.701840193	5.178745382	0.907911057
225890_at	*MGME1*	0.008070953	8.550090025	9.417060153	0.907936223
1553983_at	*DTYMK*	0.015509206	5.875413038	6.469694997	0.908143744
214184_at	*NPFF*	0.000992402	5.267509431	5.799471268	0.90827408
239503_at	*CASC10*	0.01590217	2.831187172	3.116218826	0.90853285
231762_at	*FGF10*	0.046511844	3.135319793	3.450084311	0.908766137
1563065_at	*NA*	0.000131979	3.884858127	4.274279119	0.908892007
215136_s_at	*EXOSC8*	0.01343876	8.258009423	9.083839266	0.909088017
218399_s_at	*CDCA4*	4.67E-08	8.534298814	9.387535974	0.909109572
214449_s_at	*RHOQ*	0.002689795	7.102747362	7.808091315	0.909664997
211706_s_at	*CDK19*	0.005314455	4.811159357	5.288888934	0.90967298
223557_s_at	*TMEFF2*	0.036152671	2.899432287	3.187161506	0.909722423
201088_at	*KPNA2*	4.55E-10	10.76933722	11.8348788	0.909965991
238310_at	*NA*	0.019190962	2.848699585	3.130488718	0.909985578
237631_at	*NA*	0.003389634	3.229398559	3.54629249	0.91064078
204886_at	*PLK4*	3.19E-05	8.887842065	9.759682196	0.910669209
235113_at	*LRR1*	0.00544049	8.967450197	9.843371276	0.911014118
208506_at	*HIST1H3F*	0.003324484	3.628689234	3.982933268	0.911059511
1556366_s_at	*LY86-AS1*	0.006703875	2.620042705	2.874557924	0.911459353
1560917_at	*NA*	0.001824263	3.624558138	3.973107004	0.912272973
206024_at	*HPD*	0.030123756	3.349977069	3.671977363	0.912308748
1558402_at	*CTD-3080P12.3*	0.014125344	3.090075882	3.386805933	0.912386462
234672_s_at	*NDC1*	0.025058902	8.961067375	9.820377121	0.912497276
1558565_at	*AKNA*	0.007491705	4.31786207	4.729090552	0.913042798
238998_x_at	*OTUD1*	0.001469136	4.174549653	4.572041892	0.913060237
242167_at	*NA*	0.012927546	6.87954698	7.533111598	0.913241081
203061_s_at	*MDC1*	0.016219913	7.04483377	7.710501606	0.913667376
205066_s_at	*ENPP1*	0.017529423	3.846449041	4.207135866	0.914267845
228628_at	*SRGAP2C*	0.000265952	7.615988471	8.329468176	0.914342706
205356_at	*USP13*	0.014694637	7.765567742	8.492111206	0.914444895
243301_at	*COL22A1*	0.044379998	3.117503412	3.4079313	0.914778831
1565897_at	*NA*	0.020743308	3.413556238	3.730092514	0.915139832
1560240_at	*LINC01293*	0.011375102	2.921332632	3.191882956	0.915238019
212899_at	*CDK19*	0.000254391	8.964999339	9.788343955	0.915885198
228169_s_at	*HES6*	0.000679469	4.122662801	4.500537886	0.916037795
234336_s_at	*TTLL9*	0.042982028	3.10309797	3.387166042	0.916133999
238394_at	*NA*	0.028323336	2.922832687	3.190162688	0.916201765
220200_s_at	*SETD8*	0.044016566	6.585934418	7.18795602	0.916245787
1555198_x_at	*C21orf58*	1.66E-06	6.024862558	6.574385878	0.916414502

227649_s_at	*NA*	8.00E-06	7.842049659	8.556729564	0.916477446
1555974_a_at	*NA*	0.02020387	4.821156155	5.259760534	0.916611341
215218_s_at	*WDR62*	5.02E-09	6.286504863	6.858261752	0.91663239
1569832_at	*LOC100131655*	0.027021453	3.287781505	3.586760261	0.916643786
230610_at	*NA*	4.11E-07	5.995594369	6.540037698	0.916752265
1562642_at	*NA*	0.033162911	3.527047604	3.846319797	0.916992811
209309_at	*AZGP1*	0.023945733	3.034419884	3.308640765	0.917119778
243408_at	*NA*	0.002571928	3.81204208	4.156396906	0.917150639
207973_x_at	*ACRV1*	0.001015246	3.877376976	4.227617103	0.917154246
229067_at	*NA*	0.041791484	7.680488858	8.3730268	0.917289415
219698_s_at	*METTL4*	0.028314029	7.22037217	7.870360257	0.917413172
229353_s_at	*NUCKS1*	2.37E-09	10.60620107	11.55632718	0.917783038
209592_s_at	*DCAF7*	3.47E-08	7.820521121	8.516053463	0.918326917
236786_at	*FAM135B*	0.037447937	3.18098701	3.463785287	0.918355714
222778_s_at	*WHSC1*	0.001101726	7.605457627	8.279905172	0.91854405
216351_x_at	*NA*	0.0128756	3.304306331	3.596664699	0.918714033
213454_at	*NA*	0.000206128	7.301519781	7.946922551	0.918785824
227788_at	*USP13*	0.00022762	6.819571736	7.420843456	0.918975286
218870_at	*NA*	1.96E-06	9.126064265	9.928676037	0.919162256
219203_at	*EMC9*	0.000431415	7.234254286	7.869025572	0.919332924
234102_at	*RASL11B*	0.022907043	3.614526659	3.930863509	0.919524845
1567687_at	*CECR9*	0.024537687	3.161303654	3.437562395	0.91963528
227812_at	*TNFRSF19*	0.029107159	2.617943851	2.84638252	0.919744213
1554205_s_at	*ICA1L*	0.026462094	4.053607538	4.407262594	0.9197563
237375_at	*NA*	0.012367831	3.183121593	3.460586003	0.919821554
224488_s_at	*SPON1*	0.003549816	3.821683943	4.154008208	0.919999131
201456_s_at	*BUB3*	0.0041177	10.22368953	11.11254791	0.920013089
202848_s_at	*GRK6*	0.000604955	7.143633632	7.764333352	0.920057564
204240_s_at	*SMC2*	0.014734329	9.331756362	10.14189543	0.92011956
210168_at	*C6*	0.015111646	4.082407769	4.436334078	0.920220997
218480_at	*AGBL5*	8.62E-05	6.595171974	7.166488508	0.920279432
216475_at	*NA*	0.031467435	5.815773426	6.319271687	0.920323372
1554972_at	*NA*	0.008561654	3.800512327	4.128566107	0.920540505
210981_s_at	*GRK6*	0.02251806	7.00775449	7.611612434	0.920666226
224581_s_at	*NUCKS1*	2.62E-06	10.50753789	11.41242644	0.92071024
209509_s_at	*DPAGT1*	0.04336929	7.119856906	7.73291165	0.920721357
1555124_at	*LINC01126*	0.015692976	3.939997088	4.279095805	0.920754586
217802_s_at	*NUCKS1*	1.24E-12	10.52860455	11.43439563	0.920783651
224591_at	*HP1BP3*	9.05E-14	11.45392438	12.43645109	0.920996214
225473_at	*SOGA1*	0.00334644	6.19086714	6.721754536	0.921019521
221993_s_at	*TSR3*	0.039497876	3.656572064	3.968030086	0.92150815
225684_at	*SKA2*	0.002629208	9.452940771	10.25687437	0.921620021
208080_at	*AURKA*	0.020108505	4.249912011	4.611234314	0.92164304
203062_s_at	*MDC1*	0.000520295	9.070131876	9.841221209	0.921646987
228441_s_at	*NA*	0.031227519	3.122933892	3.388275603	0.921688274
221559_s_at	*MIS12*	2.55E-05	8.940874992	9.698376397	0.921893998
239267_at	*NEK6*	5.19E-05	5.076461848	5.506310607	0.92193525
214516_at	*NA*	0.017764417	4.250056433	4.609842399	0.921952654
1563062_at	*LINC00460*	0.027834821	3.383635606	3.669905979	0.921995175
233112_at	*NA*	0.006803282	3.485550238	3.779513426	0.922221949
211750_x_at	*TUBA1C*	9.05E-14	12.66334452	13.73059858	0.922271848

238541_at	*C21orf58*	0.00015303	6.445957811	6.986009662	0.922695233
208940_at	*SEPHS1*	0.023571768	8.797453216	9.534395096	0.922707013
208460_at	*GJC1*	0.009393453	5.632479076	6.103620541	0.922809509
211905_s_at	*ITGB4*	0.005127128	3.912847379	4.239454392	0.922960131
1557731_at	*LOC400620*	0.000968179	3.508709284	3.801377684	0.923009913
218741_at	*CENPM*	0.044406853	8.216911689	8.901459813	0.923097094
1565947_a_at	*CHML*	0.045336259	3.008603272	3.258157359	0.923406374
220422_at	*UBQLN3*	0.011006628	3.687115076	3.992930511	0.92341078
207174_at	*GPC5*	0.031212031	2.941045251	3.184426012	0.923571545
221470_s_at	*IL37*	0.005101543	3.426410727	3.709736221	0.923626512
208173_at	*IFNB1*	0.048121311	3.474796218	3.761632664	0.923746822
235029_at	*GINS4*	0.021074657	5.54211044	5.999087078	0.923825637
227512_at	*MEX3A*	0.00782484	6.511467312	7.04603504	0.924132122
1559439_s_at	*C21orf58*	4.73E-06	5.73379619	6.203672231	0.924258403
231710_at	*CAPS*	0.035594775	5.067696333	5.481375954	0.924529968
230870_at	*NA*	0.038097045	4.629140693	5.00637283	0.924649612
209251_x_at	*TUBA1C*	9.05E-14	12.68426671	13.71782334	0.924655931
202529_at	*PRPSAP1*	0.002035964	9.143677359	9.886907232	0.924826859
233279_at	*NA*	0.007949284	4.254076088	4.599608321	0.924877901
203276_at	*LMNB1*	0.0111892	7.842847081	8.478090444	0.925072354
225361_x_at	*FAM122B*	0.024282774	10.01282558	10.82316458	0.925129199
1560332_at	*NA*	0.017805065	4.258075257	4.602183873	0.925229277
1559686_a_at	*NA*	0.04534741	3.310547479	3.577899825	0.925276738
221366_at	*NKX6-1*	0.001706082	3.688927616	3.98635378	0.925388919
239875_at	*NAB1*	0.034480297	3.608598006	3.899422558	0.92541856
222673_x_at	*FAM122B*	0.005865592	10.07169258	10.88272155	0.925475538
1562482_at	*NA*	0.015069633	4.675565867	5.051213097	0.925632274
205588_s_at	*FGFR1OP*	6.23E-06	7.775514685	8.400137881	0.925641316
230094_at	*KLF13*	0.001019307	4.214164961	4.551807691	0.925822277
204887_s_at	*PLK4*	5.15E-06	9.618625447	10.38747399	0.925983108
208253_at	*SIGLEC8*	0.043426352	3.319014142	3.584165386	0.926021482
234472_at	*GALNT13*	0.018044926	2.955180572	3.191132537	0.926060117
217876_at	*GTF3C5*	0.001663792	6.404215245	6.914914305	0.92614528
205186_at	*DNALI1*	0.006190357	3.885124892	4.194663061	0.926206667
1556972_at	*NA*	0.011279387	4.235867024	4.573308527	0.926215015
201090_x_at	*TUBA1B*	9.05E-14	13.04710604	14.08585358	0.926255975
231061_at	*MIR302B*	0.004163528	5.411935581	5.842343285	0.926329611
216837_at	*EPHA5*	0.000578894	4.736188293	5.112536134	0.926387251
208977_x_at	*TUBB4B*	0.007076365	11.25000707	12.14133788	0.926587101
243881_at	*SHC3*	0.044871372	4.45768353	4.810759889	0.926606946
219030_at	*TPRKB*	1.77E-13	9.119977922	9.841325252	0.926702216
216277_at	*BUB1*	0.008056279	3.978152727	4.292198426	0.926833369
222162_s_at	*ADAMTS1*	0.012812962	3.24721649	3.502880982	0.92701308
201458_s_at	*BUB3*	3.28E-05	10.76258044	11.60832758	0.927143067
224246_at	*NA*	0.003418439	4.768695472	5.1424354	0.927322387
240084_at	*CBX2*	1.20E-11	6.448809832	6.95418101	0.927328441
201663_s_at	*SMC4*	1.32E-12	10.69153131	11.52502024	0.927680046
224944_at	*TMPO*	0.004539484	11.07629394	11.93954148	0.927698434
201718_s_at	*EPB41L2*	0.034377212	8.730362376	9.408162443	0.927956169
226880_at	*NUCKS1*	9.48E-08	10.18309864	10.97289048	0.928023356
225578_at	*MZT1*	0.021781289	9.199289106	9.912724285	0.928028344

207031_at	*NKX3-2*	0.016119081	3.64681955	3.929215127	0.928129266
233173_x_at	*GTF3C5*	0.00109323	9.191708503	9.901291433	0.928334305
224908_s_at	*TTL*	0.004515757	7.340043782	7.905054628	0.928525371
241737_x_at	*NA*	0.012908659	7.545390612	8.124556812	0.928714118
1554053_at	*SPTLC1*	0.023463352	5.012619643	5.396555785	0.928855337
243355_at	*DARS-AS1*	0.034387251	4.481715072	4.824493319	0.928950415
1558773_s_at	*RANBP10*	0.014705293	4.087883797	4.399240449	0.929224907
238021_s_at	*CRNDE*	2.64E-05	10.13509125	10.9050336	0.929395692
1566555_at	*BAIAP2-AS1*	0.035475386	4.619045083	4.969709091	0.929439731
223481_s_at	*MRPL47*	0.019662058	4.658318717	5.010537848	0.929704327
204342_at	*SLC25A24*	1.01E-05	9.221702546	9.918764272	0.929722926
209974_s_at	*BUB3*	5.11E-13	11.68220423	12.56327788	0.929869127
231857_s_at	*AGBL5*	0.014875634	6.23525472	6.704333086	0.930033553
202784_s_at	*NNT*	0.001177194	8.584648994	9.229207978	0.930160965
1557136_at	*ATP13A4*	0.027621003	3.052115305	3.280744243	0.930311868
218823_s_at	*KCTD9*	0.042034049	8.409296488	9.038878845	0.930347296
213762_x_at	*NA*	6.63E-07	11.26988983	12.11165451	0.930499613
227085_at	*H2AFV*	0.004091963	8.945480561	9.611755722	0.930681222
240567_at	*NA*	0.021532353	3.6802838	3.953632612	0.930861353
1568879_a_at	*LAMA3*	0.035276094	4.196539876	4.507627617	0.930986371
213646_x_at	*TUBA1B*	9.05E-14	13.31429115	14.30097567	0.931005789
1554291_at	*UHRF1BP1L*	0.049476668	3.150146235	3.383051719	0.931155211
237701_at	*C12orf54*	0.03369543	3.937479348	4.228228261	0.931236231
224143_at	*NA*	0.003666128	4.622850505	4.962411099	0.931573466
1553066_at	*TAAR9*	0.034476682	3.798466176	4.075843481	0.931946036
214015_at	*SOCS7*	0.003097823	4.64340649	4.982417529	0.931958525
1560698_a_at	*TRHDE-AS1*	0.018512762	3.458438484	3.710802025	0.931992184
209414_at	*FZR1*	0.004931615	6.151350516	6.600184122	0.931996805
223712_at	*PCBD2*	0.01376874	7.383466292	7.921655243	0.932061049
212789_at	*NCAPD3*	3.73E-06	8.579857302	9.20474486	0.932112452
1558168_at	*H1FX-AS1*	0.011734413	4.312940784	4.627031483	0.932118314
221327_s_at	*NA*	0.001639885	4.265105094	4.575332015	0.932195758
235188_at	*PCNXL4*	0.033297955	3.703582752	3.972849692	0.932223225
213344_s_at	*H2AFX*	0.007226998	6.301417351	6.758741471	0.932335906
243120_at	*NA*	0.039994231	4.535100731	4.863714833	0.932435574
208358_s_at	*UGT8*	0.025298208	4.240497937	4.547293093	0.932532355
1564933_at	*NA*	0.015136656	3.677059641	3.942700247	0.932624701
219472_at	*CENPO*	0.034362897	6.101409757	6.542140344	0.932632049
219651_at	*DPPA4*	0.049600088	2.943541582	3.156051653	0.932665845
238974_at	*C2orf69*	0.001593873	9.453863573	10.13095709	0.933165888
1561685_a_at	*LOC441178*	0.00249105	4.33179047	4.641437222	0.93328645
213870_at	*COL11A2*	0.007636283	5.096311607	5.459235677	0.933521084
204203_at	*CEBPG*	0.001494599	8.90922184	9.541052833	0.933777644
228633_s_at	*CNTROB*	0.002172508	7.448390334	7.975953494	0.933855788
211072_x_at	*TUBA1B*	5.11E-13	13.25508745	14.19365366	0.933874235
208106_x_at	*PSG6*	0.041690789	4.131778976	4.423687488	0.934012402
205967_at	*NA*	0.008313374	11.56649594	12.38085319	0.934224464
201795_at	*LBR*	1.42E-11	11.62264772	12.43663649	0.934549123
207466_at	*GAL*	0.010900821	3.835454375	4.102605355	0.934882603
1554030_at	*ARSB*	0.042904527	4.926907232	5.269970574	0.934902228
217569_x_at	*NA*	0.016764462	4.710543398	5.038477726	0.934914007

207824_s_at	*MAZ*	0.001103556	6.400890882	6.845843849	0.935003927
211058_x_at	*TUBA1B*	5.42E-12	13.32202767	14.24741311	0.93504888
1562925_at	*LOC101927648*	0.003372046	4.165170831	4.451832949	0.935608069
212639_x_at	*TUBA1B*	9.05E-14	13.36389668	14.27569434	0.936129365
202783_at	*NNT*	2.43E-05	9.487896111	10.13522746	0.936130555
242640_at	*PROSER3*	0.000650547	5.439047496	5.809777059	0.936188677
225094_at	*SETD8*	7.25E-05	7.321983138	7.820390727	0.936268199
1568678_s_at	*FGFR1OP*	1.59E-05	8.160587915	8.712092776	0.936696627
221309_at	*RBM17*	0.002557262	5.240886743	5.594674772	0.936763432
223647_x_at	*HSCB*	0.000170213	6.671116817	7.121171108	0.936800523
217157_x_at	*NA*	0.005318402	4.435726675	4.734537349	0.936887038
218070_s_at	*GMPPA*	0.042912499	5.861878119	6.253555791	0.937367206
234292_s_at	*ZKSCAN7*	0.004726708	4.285053612	4.570645444	0.937516083
228774_at	*CEP78*	0.0009279	7.994771573	8.526726026	0.937613282
234617_at	*OR52D1*	0.005556177	4.377643004	4.668374165	0.937723252
1554110_at	*CDCP1*	0.041563573	4.061131887	4.330326992	0.937834924
201664_at	*SMC4*	1.11E-09	11.76941421	12.54425965	0.938231074
243576_at	*NA*	0.010572272	4.819049178	5.136196203	0.938252549
1553956_at	*TMEM237*	0.020515289	7.284787213	7.763902726	0.938289346
222396_at	*HN1*	0.04382976	10.24278743	10.913577	0.938536231
1555842_at	*CYTH2*	0.001407515	7.77632606	8.284392264	0.93867188
235710_at	*VPS53*	0.046566945	4.323804721	4.605454954	0.938844211
241433_at	*RCOR3*	0.015490098	5.289443708	5.633328432	0.938955321
219392_x_at	*PRR11*	0.008047459	10.36813221	11.04130437	0.939031464
1567105_at	*NA*	0.037117295	5.094802845	5.424965705	0.939140102
238849_at	*ACY1*	0.033788675	4.599070863	4.896713042	0.939215924
1553732_s_at	*CEP89*	0.031171361	5.486355651	5.840941845	0.939292976
1563426_a_at	*NA*	0.01120827	5.050123264	5.376232852	0.939342362
234191_at	*BCL2L14*	0.019941629	4.493541258	4.783525901	0.939378473
216889_s_at	*HNF4A*	0.005680772	5.6950033	6.061575427	0.939525272
225045_at	*CCDC88A*	0.00278926	8.629047244	9.183415482	0.939633763
214826_at	*PDE12*	0.04974338	4.046719517	4.306333127	0.939713533
232713_at	*NA*	0.031327758	3.750749866	3.991194773	0.939756158
229020_x_at	*EPS8L2*	0.015838151	4.763176672	5.068458004	0.939768401
226574_at	*PSPC1*	3.10E-06	8.710281247	9.265815307	0.940044773
209053_s_at	*WHSC1*	3.51E-06	9.177801532	9.759131144	0.940432237
206630_at	*TYR*	0.015260098	4.789176667	5.092227876	0.940487501
225118_at	*SETD8*	0.007046651	7.225714755	7.682444992	0.940548844
1555799_at	*FCRL5*	0.040892173	4.095624723	4.352156236	0.941056456
237833_s_at	*SNCAIP*	0.011793129	4.747417934	5.04461034	0.941087143
224734_at	*HMGB1*	0.000175664	11.01938866	11.7088447	0.941116647
225783_at	*UBE2F*	0.001322681	7.901727827	8.392825072	0.941486062
209715_at	*CBX5*	0.022622927	8.122087046	8.626067197	0.941574748
226569_s_at	*CHTF18*	0.003804305	7.375490618	7.833014689	0.941590296
215603_x_at	*NA*	0.003045552	5.29366942	5.62178467	0.941635038
207490_at	*TUBA4B*	0.001410267	5.651168066	6.001232818	0.94166786
241214_at	*NA*	0.005791025	4.422558274	4.696004122	0.941770527
218556_at	*ORMDL2*	0.00226824	6.929043617	7.355176295	0.942063567
235169_at	*FBXO27*	0.004611144	4.70970947	4.998599381	0.942205828
234744_x_at	*NA*	0.035611827	5.12387504	5.438138631	0.942211184
240778_at	*GINS4*	0.008422712	4.322567616	4.587612845	0.942225894

232913_at	*TMED8*	0.009275004	5.566798168	5.907009191	0.942405537
238879_at	*DCUN1D1*	0.018755453	6.815333106	7.230020643	0.942643658
210553_x_at	*NA*	0.033724099	4.319165613	4.580222661	0.943003415
216424_at	*CD4*	0.049554782	3.753424126	3.980271842	0.943006979
225793_at	*LIX1L*	0.011832712	9.525706156	10.09415455	0.943685388
229412_at	*TAF8*	0.017378933	6.735937226	7.137377316	0.943755238
223508_at	*NOTCH1*	0.008609263	5.037799644	5.337926762	0.94377459
216508_x_at	*NA*	2.48E-06	11.43085943	12.11128163	0.943819142
214832_at	*HNF4A*	0.002437797	5.349162731	5.667339284	0.943857861
221744_at	*DCAF7*	0.047457023	9.060788067	9.598568924	0.943972809
215890_at	*GM2A*	0.011507369	4.9038149	5.192080972	0.944479665
202943_s_at	*NAGA*	0.030945609	6.704264563	7.096870026	0.944679068
211159_s_at	*PPP2R5D*	0.005718346	8.426336969	8.919650776	0.944693596
212919_at	*DCP2*	4.20E-05	11.15784287	11.81052331	0.944737381
229924_s_at	*JAG1*	0.025397972	5.285185597	5.592999639	0.944964409
211935_at	*ARL6IP1*	0.000140044	12.57220102	13.30331164	0.945042961
205832_at	*CPA4*	0.010873907	4.954178003	5.23945424	0.945552299
244647_at	*WBP11*	0.019627073	5.821126717	6.156044097	0.945595357
213756_s_at	*HSF1*	0.000795583	5.404447218	5.713262978	0.945947568
217755_at	*HN1*	0.015468114	10.77152341	11.38596767	0.946034955
221406_s_at	*NA*	0.048912003	6.490438089	6.859629864	0.946179053
1569891_at	*ATP5A1*	0.047661484	5.204633157	5.500537918	0.946204396
229068_at	*CCT5*	0.002860529	6.498003482	6.86599353	0.946403962
217831_s_at	*NSFL1C*	1.65E-05	7.845258737	8.288340194	0.946541594
212144_at	*SUN2*	0.035459128	8.4010391	8.874484473	0.946650944
222606_at	*ZWILCH*	0.038649654	9.269509664	9.791283917	0.946710334
228357_at	*UNK*	0.000693482	8.438962597	8.909714937	0.947164153
216531_at	*NA*	0.009703951	5.3802026	5.678675729	0.94743966
209054_s_at	*WHSC1*	0.011126631	9.502898135	10.0297232	0.947473618
207015_s_at	*ALDH1A2*	0.031934813	4.398541607	4.642151372	0.947522227
218774_at	*DCPS*	0.035155484	7.368987049	7.776811048	0.947558968
233381_at	*RUFY1*	0.044219023	4.810387516	5.074528263	0.947947724
221952_x_at	*TRMT5*	4.34E-07	12.71917213	13.4123912	0.948315028
202754_at	*R3HDM1*	0.000964652	9.545672523	10.0647878	0.94842263
203856_at	*VRK1*	0.011484887	10.33325225	10.89463635	0.948471515
202487_s_at	*H2AFV*	0.004146171	11.05644042	11.65659984	0.948513337
209768_s_at	*NA*	0.011033511	5.114888022	5.391495995	0.948695506
227610_at	*TSPAN11*	0.016311718	4.552826994	4.798104952	0.948880243
205642_at	*CNTRL*	0.010424018	8.44084985	8.895407498	0.948899739
204703_at	*IFT88*	1.26E-05	7.377868543	7.774859027	0.948939205
201625_s_at	*INSIG1*	0.003421597	8.558795059	9.014602144	0.949436805
217946_s_at	*SAE1*	0.001064298	9.664473051	10.1785187	0.949497007
225904_at	*CCSAP*	0.001670599	9.950921543	10.4801171	0.949504805
202513_s_at	*PPP2R5D*	0.003782794	8.325943037	8.76707973	0.949682596
214442_s_at	*PIAS2*	0.000369422	7.603281452	8.005824361	0.949718743
202802_at	*DHPS*	0.042494669	7.869639399	8.283223574	0.950069659
237097_at	*EHD4*	0.031733421	5.318176868	5.597563123	0.950087878
201459_at	*RUVBL2*	0.001641213	9.58466768	10.08713865	0.950186967
1561917_at	*NA*	0.046189713	4.775903378	5.025952003	0.950248505
235120_at	*SEC22C*	0.020285207	6.225882636	6.5504171	0.950455909
223457_at	*COPG2*	0.001809066	6.94970892	7.308709902	0.95088039

227128_s_at	*TACSTD2*	0.040690305	4.917764272	5.171701772	0.950898657
210125_s_at	*BANF1*	1.69E-06	8.665114041	9.111997068	0.950956632
200679_x_at	*HMGB1*	3.80E-07	12.47993878	13.12337133	0.950970484
215622_x_at	*PHF7*	0.045074478	5.591023484	5.878626331	0.951076522
203222_s_at	*TLE1*	0.004121847	8.364748313	8.791936219	0.951411396
223301_s_at	*CCDC82*	0.004936291	8.396073039	8.823706579	0.951535839
215036_at	*NA*	0.011311254	4.938481729	5.189649331	0.951602202
223086_x_at	*MRPL51*	0.016105452	10.09960878	10.61118803	0.951788693
212117_at	*NA*	0.034283959	8.82508472	9.271170854	0.951884596
234485_at	*NA*	0.014998372	6.691874176	7.029877774	0.951918994
1552937_s_at	*NA*	0.01534131	6.341433339	6.660928261	0.952034475
217830_s_at	*NSFL1C*	0.010320241	7.104617072	7.461022523	0.952231018
217211_at	*NA*	0.003324282	8.565937258	8.99544515	0.952252736
217989_at	*HSD17B11*	8.74E-06	9.784373622	10.27258542	0.952474302
205436_s_at	*H2AFX*	0.000482951	10.53717011	11.06203687	0.952552431
1561355_at	*LOC692247*	0.010434129	5.390798475	5.657436529	0.952869457
212783_at	*RBBP6*	5.52E-07	9.837504136	10.32182486	0.953077995
229099_at	*UQCC3*	0.045836597	6.524381345	6.845524169	0.953087183
211747_s_at	*LSM5*	0.032448845	10.31984126	10.82599766	0.953246211
220757_s_at	*NA*	0.03950108	6.285039465	6.592411409	0.953374884
200608_s_at	*RAD21*	0.01198931	11.36560419	11.9184039	0.953617974
225592_at	*NRM*	0.034185506	9.607501776	10.07246954	0.953837759
220248_x_at	*NSFL1C*	1.87E-06	8.989933979	9.42196374	0.954146527
214553_s_at	*ARPP19*	0.000323147	8.506336652	8.908993283	0.954803352
203655_at	*XRCC1*	0.04231013	7.352331717	7.699852771	0.954866533
202902_s_at	*CTSS*	0.033053428	9.246616394	9.683108627	0.954922303
211823_s_at	*PXN*	0.027122889	5.075873436	5.313456217	0.955286584
204091_at	*PDE6D*	0.004475499	8.318489691	8.702993409	0.955819372
1559946_s_at	*RUVBL2*	0.005640301	10.04758337	10.50863385	0.956126507
1556178_x_at	*TAF8*	0.000610045	7.82942894	8.188462296	0.956153751
212781_at	*RBBP6*	0.003708249	10.38250087	10.8580077	0.956206807
225258_at	*FBLIM1*	0.043095063	5.061196237	5.292589946	0.956279683
215182_x_at	*NA*	0.010715366	7.287837415	7.620006941	0.956408238
201584_s_at	*DDX39A*	0.000761747	11.46035526	11.98095109	0.956548039
225087_at	*FOPNL*	0.000377879	9.811829202	10.2573902	0.956561953
205178_s_at	*RBBP6*	3.68E-05	10.27069764	10.73650508	0.956614612
224555_x_at	*IL37*	0.022298361	5.871195726	6.132577299	0.957378185
212296_at	*PSMD14*	0.015451109	10.04875952	10.49056092	0.957885817
1557119_a_at	*ZNF575*	0.028606632	6.045043591	6.310028353	0.958005773
209333_at	*ULK1*	0.021564133	7.615736981	7.948811483	0.958097572
201585_s_at	*SFPQ*	0.004821804	11.55303017	12.0579178	0.958128125
213494_s_at	*YY1*	0.00344893	6.781133025	7.076615575	0.958245217
229519_at	*FXR1*	0.005690848	8.780338217	9.162250202	0.958316792
201586_s_at	*SFPQ*	0.013761972	12.14789531	12.67513845	0.958403362
223072_s_at	*NA*	0.00871847	7.527177659	7.853301922	0.958472975
1555760_a_at	*RBM15*	0.0458774	8.932957664	9.319057499	0.958568789
212913_at	*NA*	0.016601561	8.745137163	9.115596593	0.959359826
218388_at	*PGLS*	0.0213747	9.491116807	9.892311945	0.959443744
207688_s_at	*INHBC*	0.033729546	7.612457394	7.930510615	0.959894988
232520_s_at	*NSFL1C*	5.14E-05	9.239912721	9.621971031	0.960293134
208808_s_at	*HMGB2*	1.82E-08	13.24480273	13.78986853	0.960473459

201119_s_at	*COX8A*	0.023987167	11.30438345	11.75421231	0.961730412
202348_s_at	*TOR1A*	0.033614455	8.536776844	8.873665693	0.962034985
203095_at	*MTIF2*	0.004036936	8.306337841	8.625735459	0.96297155
226276_at	*TMEM167A*	0.000251476	9.630285175	9.980313022	0.964928169
212995_x_at	*NA*	0.004588757	10.28807966	10.65923485	0.965179941
201662_s_at	*ACSL3*	0.039743628	8.952409988	9.268630507	0.965882714
213346_at	*TEX30*	0.027445978	8.439619292	8.733410422	0.966360091
208668_x_at	*HMGN2*	0.000411027	13.5115836	13.98010938	0.966486258
224731_at	*HMGB1*	2.97E-06	12.56868097	13.00123837	0.966729523
202158_s_at	*CELF2*	0.047056001	9.218081226	9.531570656	0.967110412
208696_at	*CCT5*	0.012595075	11.29466507	11.67850999	0.967132372
225394_s_at	*ZCRB1*	0.005287855	9.101337633	9.403255366	0.967892212
227416_s_at	*ZCRB1*	0.001953062	9.131111106	9.430136116	0.968290488
203221_at	*TLE1*	0.035650479	10.48715137	10.82854468	0.968472836
221482_s_at	*ARPP19*	0.03823097	10.43402268	10.7695751	0.968842558
201813_s_at	*TBC1D5*	0.002436242	10.14782952	10.46943125	0.969281834
201305_x_at	*ANP32B*	0.007638085	11.75638423	12.12867856	0.969304626
200978_at	*MDH1*	0.005140854	10.88793965	11.23177252	0.969387479
200750_s_at	*RAN*	0.000573227	12.33586517	12.71203845	0.970408107
218517_at	*JADE1*	0.015756391	8.613315687	8.870875328	0.970965702
200680_x_at	*HMGB1*	0.000101781	13.73022598	14.11087575	0.973024369
205292_s_at	*HNRNPA2B1*	0.000450242	12.68448346	13.03295445	0.973262318
202209_at	*LSM3*	0.031565145	10.1525934	10.42436158	0.973929513
207243_s_at	*NA*	0.010385936	13.17123594	13.51309344	0.974701759
217822_at	*WBP11*	0.00606342	10.46900286	10.73301006	0.975402315
201306_s_at	*ANP32B*	0.003312712	12.69868866	12.99779739	0.976987737
214938_x_at	*HMGB1*	0.002723234	13.77635073	14.0603231	0.979803283
208778_s_at	*NA*	0.040670442	11.70395324	11.92380566	0.981561891
218715_at	*UTP6*	0.027636555	10.40107828	10.13863851	1.02588511
213294_at	*EIF2AK2*	0.037652483	9.313116921	9.037958076	1.030444802
225298_at	*PNKD*	0.009742167	8.375059293	8.123766618	1.030933025
217906_at	*KLHDC2*	0.047275792	10.37388024	10.05873436	1.03133057
217122_s_at	*NA*	0.003396082	10.45393618	10.13557279	1.031410499
219639_x_at	*PARP6*	0.045344434	9.168969184	8.883757304	1.032104871
220175_s_at	*NA*	0.005190267	9.400986425	9.099782733	1.033100097
225174_at	*DNAJC10*	0.034492133	9.462328186	9.152149326	1.033891368
226463_at	*ATP6V1C1*	0.018335107	8.141617819	7.865990312	1.035040408
208831_x_at	*SUPT6H*	0.017686637	7.730256434	7.466813467	1.035281846
204573_at	*CROT*	0.021302416	6.838198939	6.600998946	1.035933954
225863_s_at	*C19orf12*	0.046516059	7.140537258	6.891368561	1.036156635
217988_at	*CCNB1IP1*	0.019549258	10.70274312	10.3261317	1.036471685
202386_s_at	*KIAA0430*	0.036872278	9.836475339	9.483241916	1.037248172
227166_at	*DNAJC18*	0.023028027	6.971242914	6.719319994	1.037492324
224755_at	*TM9SF3*	0.02755884	9.875547465	9.498318821	1.039715307
200658_s_at	*PHB*	0.047375212	9.971861917	9.59021114	1.039795868
210681_s_at	*NA*	0.041409492	9.756572195	9.3797644	1.040172416
209553_at	*VPS8*	0.047630035	8.115470868	7.801943041	1.040185865
203244_at	*PEX5*	0.031205799	7.743303713	7.440909059	1.040639477
203551_s_at	*COX11*	0.002473101	7.861358917	7.552135178	1.040945207
203778_at	*MANBA*	0.043475446	8.696419877	8.353730328	1.041022338
202811_at	*STAMBP*	0.026420447	8.405013751	8.071787738	1.041282802

228961_at	*MIER3*	0.010516121	10.22341927	9.812771734	1.041848271
208914_at	*GGA2*	0.004646733	8.024412887	7.701453554	1.041934854
222850_s_at	*DNAJB14*	0.000242345	9.773165377	9.379284508	1.041994767
212112_s_at	*STX12*	0.025830144	8.438056716	8.097223938	1.042092547
200947_s_at	*GLUD1*	0.001193102	10.98987433	10.54324101	1.042362052
209317_at	*POLR1C*	0.007423155	8.629377144	8.275165899	1.042804126
220933_s_at	*ZCCHC6*	0.012002681	8.398289375	8.053047234	1.042870994
226741_at	*SLC12A6*	0.01411163	10.28814098	9.864546324	1.042941119
202415_s_at	*HSPBP1*	0.024942034	7.411506251	7.105932136	1.043002679
209341_s_at	*IKBKB*	0.000148527	9.139373692	8.762089485	1.043058703
210858_x_at	*ATM*	0.00360516	8.017912813	7.685508538	1.043250785
224493_x_at	*TMEM241*	0.00123519	8.248363507	7.901224939	1.043934779
221894_at	*ADCK2*	0.006752938	6.775084933	6.486765488	1.044447336
214966_at	*GRIK5*	0.04197713	6.08530136	5.825646045	1.044571076
218781_at	*SMC6*	0.002451617	9.719376292	9.304577933	1.04458003
208420_x_at	*SUPT6H*	0.006038283	7.798199293	7.46490262	1.044648496
225302_at	*TMX3*	0.048632153	9.969090511	9.539359426	1.045048212
222605_at	*RCOR3*	0.004607635	9.028415952	8.637828421	1.045218255
211027_s_at	*IKBKB*	0.03578629	5.819523147	5.566545795	1.04544602
202117_at	*ARHGAP1*	0.024920919	9.343451461	8.934032341	1.045826913
229447_x_at	*NA*	0.019049419	10.85102168	10.37346004	1.046036871
218102_at	*DERA*	0.007602205	9.403909235	8.9896387	1.046083113
227479_at	*NA*	0.026527382	7.17790095	6.859823392	1.046368185
205173_x_at	*CD58*	0.002333358	9.700765715	9.270578138	1.046403533
211744_s_at	*CD58*	0.011446165	8.570230746	8.188973523	1.046557389
204064_at	*THOC1*	0.017216258	9.948856948	9.502996938	1.046917832
213612_x_at	*NA*	0.021521323	11.22631222	10.71217408	1.047995685
202714_s_at	*KIAA0391*	0.029065328	6.022613375	5.743539581	1.048589165
1555981_at	*ASB16-AS1*	0.038236694	6.424747835	6.125057545	1.048928567
219373_at	*DPM3*	0.043476827	7.992854794	7.618496122	1.049138133
226318_at	*TBRG1*	0.043517423	9.759808626	9.301410449	1.049282652
201103_x_at	*NA*	0.009410311	11.00532002	10.48581402	1.049543698
228183_s_at	*RPAIN*	0.007769514	9.899612528	9.421924321	1.050699644
202536_at	*CHMP2B*	0.026227777	9.567644943	9.098831243	1.051524607
244669_at	*NA*	1.82E-05	10.55572048	10.03786069	1.051590653
225107_at	*HNRNPA2B1*	0.011783858	10.74371632	10.21545437	1.051712036
212833_at	*SLC25A46*	9.51E-05	9.879203903	9.393268996	1.051732247
208012_x_at	*SP110*	0.003575497	8.589445584	8.163837682	1.052133313
204950_at	*CARD8*	0.00676174	8.077008635	7.676372703	1.052190787
208934_s_at	*LGALS8*	0.009615228	8.041166455	7.640714663	1.052410253
215162_at	*RALGAPA1*	0.046426133	5.636069934	5.354956081	1.052496015
212908_at	*DNAJC16*	0.042046323	7.959749886	7.562710537	1.052499609
225879_at	*TSEN54*	0.018468268	8.657594383	8.216432448	1.053692638
225772_s_at	*COX14*	0.001087398	9.362486718	8.883105687	1.053965476
226744_at	*NA*	0.035060464	9.895081719	9.387157892	1.054108372
1559723_s_at	*NA*	0.014368338	6.474482708	6.142036361	1.054126405
227274_at	*NA*	0.005326958	8.219381083	7.795556152	1.054367504
222149_x_at	*NA*	0.041018835	8.099049107	7.678974778	1.054704481
208392_x_at	*SP110*	0.047560724	7.395474861	7.011236354	1.054803245
226680_at	*IKZF5*	0.000603419	8.109516884	7.688165512	1.05480519
209002_s_at	*CALCOCO1*	0.00417854	6.819208635	6.462450072	1.055204846

227313_at	*CNPY4*	0.009817425	7.230451776	6.850547519	1.055456043
202962_at	*KIF13B*	0.002033964	7.534709745	7.137368332	1.055670577
227106_at	*TMEM198B*	0.008171623	6.574416502	6.22752827	1.055702394
204791_at	*NR2C1*	1.99E-05	9.141803082	8.659417997	1.05570641
225564_at	*SPATA13*	0.038274524	7.954944815	7.534671651	1.055778564
49329_at	*KLHL22*	0.034908366	7.117519754	6.741467904	1.055781894
230375_at	*PNISR*	0.001163805	9.324823897	8.831441759	1.055866545
222271_at	*NA*	0.011921822	5.48900202	5.198455264	1.055890979
222469_s_at	*TOLLIP*	4.67E-05	6.739675799	6.381589621	1.056112379
200962_at	*RPL31*	0.044165433	9.695348515	9.180217536	1.056113156
214291_at	*NA*	0.00160628	8.757472522	8.286919362	1.05678264
223711_s_at	*THYN1*	0.003124485	8.109177921	7.671878051	1.057000368
215548_s_at	*SCFD1*	0.008539615	8.86938747	8.390201378	1.057112585
1554575_a_at	*BPNT1*	0.033727038	6.756257509	6.389816175	1.057347711
209433_s_at	*PPAT*	0.014947444	9.206813007	8.706562822	1.057456679
209762_x_at	*SP110*	0.005942669	8.523406999	8.057438927	1.057830792
230178_s_at	*ELP2*	0.035121954	7.803027579	7.373690722	1.058225504
203230_at	*DVL1*	0.009764179	7.852104837	7.417031942	1.058658625
242008_at	*NA*	0.013666013	8.928306992	8.433219821	1.058706779
218298_s_at	*C14orf159*	0.020332485	9.008861635	8.506180122	1.059096034
236794_at	*NA*	0.041740335	7.333459021	6.921288191	1.059551173
208189_s_at	*MYO7A*	0.047728416	4.535640998	4.280211263	1.059676899
210280_at	*MPZ*	0.034203178	6.238527982	5.886999277	1.059712714
236965_at	*UBQLNL*	0.002470148	4.93161138	4.653238508	1.059823469
227737_at	*SRPRB*	0.048861295	7.268468612	6.854400159	1.060409145
208972_s_at	*ATP5G1*	0.030270735	9.368000586	8.833808566	1.060471315
1557528_at	*STRADA*	0.037068807	4.826624963	4.550264933	1.060734932
222507_s_at	*TMEM9B*	0.030047775	8.229509853	7.756356908	1.061001956
236985_at	*NA*	0.043091826	4.081381251	3.845849471	1.06124311
35974_at	*LRMP*	0.025977168	9.337678345	8.79677047	1.06148937
201522_x_at	*NA*	0.000142084	10.42289103	9.816870827	1.061732523
219980_at	*C4orf29*	0.016175061	7.956180647	7.493253466	1.061779197
232140_at	*LOC100132352*	0.044215044	6.700226297	6.310283508	1.061794813
223092_at	*ANKH*	0.018956049	9.472772547	8.92111319	1.061837502
243931_at	*NA*	0.032759169	9.584134591	9.021466043	1.062369968
218856_at	*TNFRSF21*	0.002791536	8.734154889	8.22062296	1.062468736
236472_at	*NA*	8.25E-05	7.588061991	7.139736311	1.06279303
227135_at	*NAAA*	4.41E-05	8.178156422	7.694043689	1.062920455
236924_at	*NA*	0.044329184	7.337750766	6.90319778	1.06294952
211383_s_at	*WDR37*	3.42E-07	8.615634477	8.102131984	1.063378688
209797_at	*CNPY2*	0.025959415	8.210460086	7.721039368	1.063387932
219076_s_at	*PXMP2*	0.000345243	8.682399692	8.163613186	1.063548639
221912_s_at	*CCDC28B*	0.001462633	7.078252559	6.655203506	1.063566659
243667_at	*NA*	0.038533116	5.825538676	5.477163201	1.063605093
216316_x_at	*NA*	0.032404409	6.142566657	5.774820201	1.063681023
205504_at	*BTK*	0.026412107	9.543095589	8.966417515	1.064315327
226412_at	*PNISR*	0.00518441	9.980035035	9.374710585	1.064569935
213234_at	*KIAA1467*	0.000251878	7.51643579	7.059309423	1.064755111
215211_at	*RRN3P1*	0.001650209	6.579543504	6.179083769	1.064808918
242878_at	*NA*	0.025947632	6.86778543	6.447654167	1.065160328
225656_at	*EFHC1*	0.014301282	8.360405401	7.847070141	1.065417442

223980_s_at	*SP110*	0.001784129	7.836131553	7.354471621	1.065492119
202309_at	*MTHFD1*	0.001221269	11.20105074	10.51067364	1.065683431
230888_at	*WDR91*	0.010329978	5.753767216	5.399075238	1.06569495
235174_s_at	*LINC01003*	0.040736191	8.148353174	7.644957236	1.065846796
226550_at	*NA*	6.28E-05	9.523632778	8.933245853	1.066088736
227256_at	*USP31*	0.026204589	7.219139113	6.770463139	1.066269613
219040_at	*CORO7*	1.71E-05	6.803972586	6.379891631	1.066471498
228738_at	*D2HGDH*	0.001507094	7.884662773	7.391294924	1.066749853
37117_at	*NA*	0.02915034	4.055363487	3.80154305	1.06676774
219259_at	*SEMA4A*	0.033369283	7.409449539	6.945015733	1.066872967
231194_at	*SNX32*	0.004824019	5.243078649	4.914046142	1.066957553
209403_at	*NA*	0.016578274	8.400098236	7.87143278	1.067162545
244659_at	*TRIP12*	0.048278249	7.287581885	6.826684981	1.067514014
1557244_a_at	*NA*	0.012668553	4.535125391	4.247481868	1.067720954
1559496_at	*PPA2*	0.004755417	7.232408614	6.773178558	1.067801262
213078_x_at	*LPCAT4*	0.010366338	6.237799657	5.841508917	1.067840475
1561130_at	*HECTD4*	0.007867736	6.097946069	5.706675238	1.068563711
232186_at	*FITM2*	0.005898775	4.810807072	4.502019488	1.068588682
223407_at	*ENKD1*	0.006266573	7.255082536	6.788658752	1.068706324
212902_at	*SEC24A*	0.003686124	6.407409452	5.992568619	1.06922588
227626_at	*PAQR8*	0.006804554	8.032858705	7.508859695	1.069784099
240146_at	*NA*	0.00734673	6.86012719	6.410638187	1.070116109
208386_x_at	*DMC1*	0.015294075	6.253952838	5.844159028	1.070120236
224604_at	*C4orf3*	0.002425601	10.21524024	9.543051833	1.070437468
221669_s_at	*ACAD8*	0.005541112	8.033071411	7.501933854	1.070800085
218140_x_at	*SRPRB*	0.034904518	8.787093431	8.203967595	1.071078515
203805_s_at	*FANCA*	0.004247735	7.337780005	6.848822558	1.071392921
217367_s_at	*ZHX3*	0.013604614	6.205227861	5.789554584	1.071797108
65493_at	*HEATR6*	0.03201064	6.031950216	5.626075092	1.072141789
209994_s_at	*NA*	0.000100699	7.115026757	6.635255491	1.072306374
244383_at	*NA*	6.78E-05	6.439019656	6.004091991	1.072438541
1552671_a_at	*SLC9A7*	0.046979772	6.613497553	6.16671435	1.07245077
1559257_a_at	*MAGI1*	0.030696465	4.326986099	4.032728991	1.072967241
237048_at	*NA*	0.00262088	6.31215124	5.882225894	1.073088887
219209_at	*IFIH1*	0.002366706	7.495403274	6.982632745	1.073435128
1568943_at	*INPP5D*	0.006762565	7.088780946	6.603626531	1.073467876
239955_at	*NA*	0.0001951	6.987065265	6.505221908	1.074070241
239236_at	*NA*	0.038968656	7.756288003	7.220166564	1.074253334
219594_at	*NINJ2*	0.046508986	6.278407791	5.840207361	1.075031656
209478_at	*STRA13*	3.89E-11	9.486965504	8.824128766	1.075116394
222275_at	*MRPS30*	0.008378154	7.387486435	6.869138907	1.075460336
226583_at	*C12orf76*	0.002016781	7.333547304	6.817526153	1.075690381
227632_at	*TBC1D24*	0.002765503	6.12517294	5.692909681	1.07593011
1555866_a_at	*HEXDC*	2.31E-08	8.184422623	7.605839321	1.076070934
1554455_at	*LINS*	0.000872721	5.701245755	5.295328634	1.0766557
218109_s_at	*MFSD1*	3.53E-05	10.53918203	9.788306262	1.076711511
234043_at	*NA*	0.001101827	5.670757459	5.266334434	1.076794026
228897_at	*DERL3*	0.004279783	6.011660379	5.582051059	1.076962628
1554311_a_at	*SUPT6H*	0.031536195	3.99637414	3.709806405	1.077246008
1552318_at	*GIMAP1*	0.033430971	3.669483937	3.406001676	1.07735823
239228_at	*NA*	0.024985744	6.85722801	6.364753391	1.077375287

230097_at	*GART*	0.000873911	7.989540523	7.415043075	1.077477291
238536_at	*LOC286272*	0.021499912	6.1001522	5.661277915	1.077522123
1554443_s_at	*BEST1*	0.015270668	4.553551179	4.224911199	1.077786246
238824_at	*RPS29*	0.009256422	7.127083351	6.609888665	1.078245597
205447_s_at	*MAP3K12*	0.002254897	6.246580414	5.792254867	1.078436733
229679_at	*NA*	0.022214115	6.060253312	5.614189159	1.079452997
1554456_a_at	*LINS*	0.011563136	6.201335437	5.744155571	1.07959044
224605_at	*C4orf3*	0.005087915	8.952481933	8.29017163	1.079891024
242581_at	*NA*	0.047566173	4.251866242	3.93513889	1.080486956
235483_at	*STX3*	0.001282732	6.197231183	5.734551149	1.080682868
242225_at	*NA*	0.036066035	5.598628618	5.18019683	1.080775268
224280_s_at	*MTFR1L*	0.000646267	7.337652568	6.789193749	1.080784087
218697_at	*NCKIPSD*	0.016618631	6.125516119	5.665897338	1.08112021
242844_at	*PGGT1B*	0.013295967	5.928763485	5.482393046	1.081418905
222282_at	*NA*	0.047629401	7.908257907	7.311657417	1.081595794
214241_at	*NDUFB8*	4.25E-05	8.397152611	7.761624613	1.081880795
230742_at	*RBM5*	4.44E-05	7.375331629	6.813707373	1.08242565
225883_at	*ATG16L2*	0.006036246	7.124248554	6.581731416	1.082427724
1557246_at	*KIDINS220*	4.84E-05	6.45855397	5.965414452	1.08266643
219632_s_at	*NA*	0.00209269	6.123064177	5.651857534	1.083371996
219458_s_at	*NSUN3*	0.021012479	7.57232389	6.988074986	1.083606559
228940_at	*NDUFB4*	0.000317843	7.052872494	6.506974236	1.083894332
239449_at	*NA*	0.005118843	6.932518551	6.391408611	1.084662079
218380_at	*LOC728392*	1.50E-08	8.619027906	7.944000125	1.084973284
226805_at	*FITM2*	0.000173318	6.099259486	5.62148859	1.084990103
236210_at	*NA*	0.01037033	6.537631237	6.025177775	1.085052007
219731_at	*ENTPD1-AS1*	2.61E-07	8.020336927	7.388442722	1.085524681
243874_at	*NA*	0.00135317	6.434411546	5.927307585	1.085553846
241775_at	*NA*	0.002840195	8.085253462	7.444720361	1.086038571
222357_at	*ZBTB20*	8.35E-07	7.394392747	6.806900328	1.086308362
241413_at	*NA*	0.004529985	5.198120948	4.782747627	1.086848262
226298_at	*RUNDC1*	0.0403249	6.404721383	5.892291831	1.086966085
209460_at	*ABAT*	5.51E-05	6.239655609	5.738853883	1.087265112
214917_at	*PRKAA1*	0.000636989	6.509618579	5.986007688	1.087472472
204939_s_at	*PLN*	0.008100181	3.639783777	3.346459082	1.087652258
243528_at	*NA*	0.003122642	7.394514911	6.797856917	1.087771485
228370_at	*NA*	4.14E-05	8.394014428	7.714693707	1.088055436
225633_at	*DPY19L3*	0.007501428	8.442006553	7.758772001	1.088059625
1562012_at	*LOC100506730*	6.74E-05	6.15428243	5.655712242	1.088153387
1554360_at	*FCHSD2*	0.004283993	6.281158288	5.769795728	1.088627498
212911_at	*DNAJC16*	0.008966095	6.874896525	6.312833233	1.089035029
232901_at	*RARS2*	0.004896873	5.67700107	5.212594533	1.089093164
205383_s_at	*ZBTB20*	0.000541373	7.596574178	6.973094475	1.089412198
204985_s_at	*TRAPPC6A*	0.000735688	8.828959689	8.101889847	1.089740771
240304_s_at	*TMC5*	0.042830829	3.287012757	3.015802715	1.089929637
238475_at	*NA*	0.010152161	5.567749585	5.107377129	1.090138724
1562898_at	*NA*	0.004545903	4.857331082	4.455389454	1.090214701
223503_at	*TMEM163*	0.04284738	3.285062212	3.012755139	1.090384734
1570533_at	*CMPK1*	0.031346336	3.16388638	2.901403705	1.090467478
1560137_at	*NA*	0.000755304	5.337705921	4.89113885	1.091301246
230506_at	*LINC01590*	0.021928486	4.377459351	4.010379582	1.091532425

210732_s_at	*LGALS8*	0.001105904	6.154837742	5.634925602	1.092266017
243303_at	*NA*	0.000414102	6.346992398	5.810019702	1.092421838
235645_at	*ESCO1*	0.028122453	6.950118959	6.360387193	1.092719476
226487_at	*FAM222A*	0.003303203	7.338323068	6.706819871	1.094158365
237001_at	*NA*	0.019495192	4.491886832	4.103752452	1.094580359
206072_at	*UCN*	1.33E-07	6.080499408	5.553687623	1.094858015
213737_x_at	*GOLGA8N*	0.001954787	9.266381777	8.462848271	1.094948353
219812_at	*PVRIG*	0.022162745	5.46375582	4.986965828	1.095607231
238289_at	*NA*	0.002759087	5.755279904	5.252792451	1.095661014
1554963_at	*NA*	0.010240226	6.616979166	6.036728479	1.096120057
1554964_x_at	*NA*	0.022706706	5.829126115	5.315043953	1.09672209
230707_at	*SORL1*	0.01800266	7.036327966	6.414817806	1.096886643
235628_x_at	*NA*	0.01597391	5.089048916	4.639088236	1.096993344
216850_at	*NA*	0.002565128	5.223968884	4.761738863	1.097071686
237762_at	*NA*	0.031956565	3.11307752	2.837103751	1.097273062
215977_x_at	*GK*	0.028983838	6.861791306	6.253253176	1.097315447
214239_x_at	*NA*	0.000867591	5.201305128	4.739487673	1.097440375
228198_s_at	*FAHD2CP*	0.028347279	5.410007808	4.926875131	1.09806067
230058_at	*SDCCAG3*	0.002430897	6.240762187	5.68292233	1.098160739
225947_at	*MYO19*	4.84E-05	8.528388385	7.766024749	1.098166522
1558385_at	*NA*	0.000252154	5.396067779	4.913387868	1.098237698
230735_at	*NA*	0.045848218	6.174289155	5.621939887	1.098248875
217167_x_at	*GK*	1.60E-07	6.478172586	5.897818284	1.098401523
238626_at	*ANKS6*	0.006541499	3.466707722	3.154600897	1.098937024
221488_s_at	*CUTA*	0.000707682	10.60103989	9.645176906	1.099102691
236375_at	*NA*	0.031702934	5.063336895	4.604799907	1.099578048
222293_at	*CADM4*	0.017081312	4.532722422	4.122027277	1.099634262
240216_at	*NA*	0.032443302	4.51955735	4.109482745	1.099787402
222787_s_at	*TMEM106B*	0.002327031	6.112730525	5.556905865	1.100024127
241905_at	*PIK3C2A*	1.68E-05	6.457494703	5.867794769	1.10049771
221477_s_at	*NA*	0.03176436	7.406584567	6.729110911	1.100678034
202022_at	*ALDOC*	2.92E-06	7.265182276	6.599770408	1.100823487
243851_at	*NA*	0.001982671	6.565705272	5.962261494	1.101210552
238604_at	*NA*	0.003664867	5.095031574	4.62597269	1.101396812
238217_at	*NA*	0.026350756	3.739610222	3.393695755	1.101928544
218481_at	*EXOSC5*	0.04314487	8.576492219	7.781879907	1.102110585
1557166_at	*PDCD4*	8.00E-06	4.717807649	4.278066875	1.102789598
216945_x_at	*PASK*	0.038009305	7.471987098	6.775395595	1.102811931
243063_at	*NA*	0.002744261	4.154294036	3.764026527	1.103683517
225573_at	*NA*	0.017665567	7.383959412	6.689011992	1.103893882
209889_at	*SEC31B*	0.004236961	7.864417988	7.123983814	1.103935409
204775_at	*CHAF1B*	0.007486891	7.011718485	6.349819502	1.104239023
230918_at	*GALK2*	0.015143396	6.491427087	5.877409452	1.104470795
221814_at	*ADGRA2*	0.002109481	4.691908104	4.245754075	1.1050824
221521_s_at	*GINS2*	0.017504693	9.488078314	8.584464279	1.105261552
209859_at	*TRIM9*	0.040614299	4.071030047	3.680774665	1.106025339
237081_at	*NA*	0.016867626	5.639244942	5.098190052	1.106126858
228742_at	*NA*	0.044414856	6.294891446	5.688342271	1.106630218
1556055_at	*NA*	0.000102069	7.052959112	6.37204505	1.106859581
239545_at	*NA*	0.014418937	6.88021446	6.21491504	1.107048836
1557118_a_at	*INTS6-AS1*	0.022199136	3.947568302	3.56207962	1.108220119

202922_at	*GCLC*	0.039806293	8.244011659	7.436455885	1.108594173
243992_at	*NA*	0.049707605	6.833587401	6.161285118	1.109117217
205776_at	*FMO5*	0.032905613	5.406761593	4.874561561	1.109179056
205389_s_at	*ANK1*	0.027603735	4.053862483	3.652076956	1.110015624
237104_at	*NA*	0.021008529	5.081459394	4.577713717	1.110043071
201505_at	*LAMB1*	0.036547059	3.242705563	2.920391901	1.110366578
219690_at	*IGFLR1*	2.92E-08	6.556588947	5.894288187	1.112363145
226730_s_at	*USP37*	0.002026098	8.769528474	7.882022434	1.112598771
1560069_at	*PLEKHM3*	0.034657348	5.571310288	5.007274675	1.112643234
244204_at	*NA*	2.23E-08	6.616032242	5.943149245	1.113219939
230005_at	*SVIP*	0.038609331	7.853328035	7.053586196	1.113380884
239224_at	*FBXL20*	0.00330192	5.480932511	4.920533883	1.113889802
226868_at	*GXYLT1*	0.041485812	7.368030095	6.613611857	1.114070534
243001_at	*RBFA*	0.017598442	4.389160159	3.937981702	1.114570989
227749_at	*POU2F2*	0.049626156	6.692031692	5.996361968	1.116015299
232746_at	*ACKR3*	0.000905945	4.293366959	3.846432446	1.116194557
240141_at	*NA*	0.000787918	6.748782514	6.045838852	1.116269004
236699_at	*NA*	0.04237284	6.783600018	6.071086876	1.117361711
241853_at	*NA*	0.029687264	3.190922163	2.854567206	1.117830457
204773_at	*IL11RA*	0.039734537	6.854689906	6.131182092	1.11800462
238881_at	*NA*	0.00542052	3.738838664	3.343534694	1.118229361
226754_at	*ZNF251*	0.037004059	6.714421196	6.003102597	1.118491828
243023_at	*NA*	0.005080537	6.405741327	5.724812935	1.118943344
242812_at	*HCG18*	0.000792886	6.31877203	5.646647088	1.119030804
226842_at	*FBXL20*	9.05E-14	8.596364683	7.681573436	1.119089045
236862_at	*GOPC*	8.34E-05	6.268885258	5.601031128	1.119237711
230000_at	*RNF213*	0.036872389	5.335284316	4.76252867	1.120262929
241982_at	*NA*	0.039886661	5.792821358	5.170420191	1.120377289
223741_s_at	*TTYH2*	0.023961046	6.427521612	5.731743705	1.121390269
215567_at	*FCF1*	2.53E-07	6.628887957	5.907150358	1.122180333
244387_at	*NA*	0.000667216	4.37112557	3.894981946	1.122245399
230757_at	*NA*	0.006351272	5.104780361	4.546173925	1.122873969
226729_at	*USP37*	0.017093005	7.76004645	6.909376793	1.123118145
242191_at	*NA*	0.003386021	6.785863882	6.035132799	1.124393465
226591_at	*NA*	0.038466178	6.093877871	5.41436987	1.125500846
1557113_at	*LOC283588*	0.002265844	4.788969592	4.253984142	1.125761035
235365_at	*DFNB59*	0.004111991	5.806263887	5.153202459	1.126729239
227350_at	*HELLS*	0.002235485	10.30021113	9.117282089	1.129745798
237135_at	*NA*	9.32E-05	3.684537638	3.260056356	1.130206731
215966_x_at	*GK3P*	0.000738369	5.561911013	4.913093058	1.132058959
243150_at	*NA*	0.008666028	5.106211858	4.505037584	1.133444896
232978_at	*NA*	0.004833182	6.357291425	5.604188386	1.134382178
229202_at	*PCNXL2*	0.039675278	7.29989047	6.432044083	1.134925441
205976_at	*FASTKD2*	0.002463601	6.539368045	5.756181435	1.136060098
221270_s_at	*QTRT1*	0.00045795	7.034195533	6.191739712	1.136061246
203245_s_at	*LINC00094*	0.006577558	5.482107079	4.824281241	1.136357274
210528_at	*MR1*	0.005416037	4.357415748	3.831407931	1.137288387
236635_at	*ZNF667*	0.035445969	7.944139814	6.981800758	1.137835365
239487_at	*NA*	0.03976006	3.775108631	3.317160346	1.138054311
226587_at	*NA*	7.52E-09	6.698092184	5.88250514	1.13864621
230281_at	*C16orf46*	0.044035273	5.719755567	5.020520185	1.139275485

214085_x_at	*GLIPR1*	0.039392121	8.793986533	7.699022196	1.142221221
223838_at	*TSGA10*	0.000848527	3.362631184	2.940781198	1.143448274
209459_s_at	*ABAT*	0.006472254	6.273598878	5.486517878	1.143457293
228084_at	*PLA2G12A*	0.003326765	6.040764472	5.280606043	1.143952876
227775_at	*CELF6*	0.007129662	5.712371856	4.991264079	1.144473978
221277_s_at	*PUS3*	0.000941404	6.587906456	5.744954729	1.146729046
215071_s_at	*HIST1H2AC*	0.000913768	10.29448352	8.953796319	1.149733939
209321_s_at	*ADCY3*	0.028688935	7.138503273	6.205247652	1.150397804
202364_at	*MXI1*	0.000166353	8.836304548	7.672031131	1.151755565
213797_at	*RSAD2*	0.000228067	4.863512116	4.222579445	1.151787001
205278_at	*GAD1*	2.88E-05	3.435177948	2.977270875	1.153800945
238363_at	*NA*	0.037094535	3.645332465	3.157269108	1.154584022
1560741_at	*NA*	0.006505752	6.457258966	5.589893518	1.155166721
232125_at	*ZBTB20*	0.049325964	4.149804666	3.59071475	1.155704353
207387_s_at	*GK*	2.69E-05	6.656593794	5.75333448	1.156997532
227506_at	*SLC16A9*	0.019257353	4.178864878	3.605687624	1.158964756
214681_at	*GK*	1.44E-06	6.490878879	5.59633236	1.159845138
210306_at	*L3MBTL1*	0.015105257	5.820743969	5.014833343	1.160705366
226136_at	*GLIPR1*	0.001388674	7.989969441	6.876764432	1.161879183
230598_at	*NA*	0.000124632	5.712284008	4.904225515	1.164767809
237689_at	*NA*	0.042704072	5.204180718	4.465841891	1.165330266
1564467_at	*FAM161A*	0.00597065	4.688616078	4.021711535	1.165826051
229393_at	*L3MBTL3*	0.048952909	7.599273239	6.517948638	1.165899528
1556159_at	*NA*	0.0149237	3.712168423	3.182058811	1.166593279
1566150_at	*CALML4*	0.013991421	3.710490217	3.180142319	1.166768605
227349_at	*HELLS*	0.012025918	6.184649877	5.294118935	1.168211359
243525_at	*NA*	0.006324484	4.43735827	3.797672722	1.168441463
243709_at	*SLC38A9*	9.05E-14	5.088048296	4.354100235	1.168564806
205698_s_at	*MAP2K6*	0.004417096	7.500716568	6.408451896	1.170441269
213506_at	*F2RL1*	1.69E-06	4.540612432	3.878429054	1.170734947
232412_at	*FBXL20*	0.003238389	3.837350213	3.277053525	1.170975751
1563173_at	*NA*	6.69E-05	2.961226039	2.523557711	1.173433057
239223_s_at	*FBXL20*	0.011072093	6.580307188	5.600433934	1.174963809
220085_at	*HELLS*	0.001150764	8.090930146	6.870072606	1.177706643
218772_x_at	*TMEM38B*	0.045831867	7.152260309	6.071307871	1.178042764
236067_at	*NA*	0.010375647	4.896779133	4.1452169	1.181308301
223556_at	*HELLS*	0.002372445	8.839726486	7.48076636	1.181660549
238376_at	*LOC100505564*	0.014129326	6.161734231	5.20804412	1.18311867
202708_s_at	*HIST2H2BE*	0.010996562	9.691756907	8.185681655	1.183988984
207057_at	*SLC16A7*	4.67E-05	7.393247913	6.218572569	1.188897907
222306_at	*NA*	0.012801243	4.50476431	3.785282394	1.190073511
232489_at	*TRMT13*	0.001051961	6.995418499	5.869296692	1.191866567
221778_at	*KDM7A*	0.000970008	7.016527734	5.873126787	1.194683511
230939_at	*NA*	0.000862237	4.293879224	3.592644247	1.195186311
242890_at	*NA*	1.13E-05	8.360859757	6.986526963	1.196711871
243855_at	*NA*	3.74E-05	4.505642077	3.764909855	1.196746337
241866_at	*SLC16A7*	0.00985688	4.841643403	4.040352065	1.198322157
239212_at	*LTV1*	0.00012738	6.345732915	5.246643567	1.20948428
1555968_a_at	*NA*	0.008660973	7.349052284	6.021563068	1.220455918
230003_at	*SLC16A7*	9.05E-14	7.374660232	6.036073587	1.221764468
242584_at	*FAM161A*	0.000300561	7.15604175	5.856061715	1.221988787

210807_s_at	*SLC16A7*	6.87E-05	6.497266453	5.269367195	1.233025943
222735_at	*TMEM38B*	0.015588467	7.055487887	5.663342401	1.245816938
228426_at	*CLEC2D*	0.038077067	5.70835211	4.582013217	1.245817469
235089_at	*FBXL20*	5.62E-05	7.475277117	5.977844995	1.250496981
213424_at	*KIAA0895*	0.001023049	3.920340386	3.125468504	1.254320874
208886_at	*H1F0*	0.000239349	7.161590531	5.670039642	1.263058282
241925_x_at	*SLC16A7*	4.22E-07	6.397770696	5.05849293	1.264758256
225060_at	*LRP11*	0.016925882	6.126758828	4.819986503	1.271115349
1558410_s_at	*NA*	0.002354723	5.846848358	4.504761054	1.297926413
225142_at	*KDM7A*	0.016439635	5.28754566	4.061728372	1.301796963
202330_s_at	*UNG*	2.67E-05	8.818015532	6.673289433	1.321389642

Supplementary Table 5: The G1b^{low} - G2/M signature is associated with pathways involved in cell cycle regulation

Top 20 pathways (Graphite pathway annotation analysis, Reactome database) associated with the G1b^{low}/G2/M gene expression profile ranked according to the number of mapped genes.
(Pathway genes, number of genes annotated to the respective pathways; mapped genes, number of overlapping genes annotated to a specific pathway and included in the G1b^{low}/G2/M-profile.)

Pathway	Pathway Genes	Mapped Genes
M Phase	103	45
Mitotic Prometaphase	88	39
Chromosome Maintenance	121	30
Deposition of New CENPA-containing Nucleosomes at the Centromere	63	26
Nucleosome assembly	63	26
Meiosis	113	24
Meiotic Recombination	84	21
Meiotic Synapsis	73	20
RNA Polymerase I, RNA Polymerase III, and Mitochondrial Transcription	124	20
RNA Polymerase I Chain Elongation	77	19
RNA Polymerase I Promoter Clearance	83	19
RNA Polymerase I Transcription	85	19
Amyloids	60	18
G2/M Transition	82	18
Mitotic G2-G2/M phases	85	18
RNA Polymerase I Promoter Opening	60	18
Telomere Maintenance	77	18
Packaging Of Telomere Ends	49	17
APC/C-mediated degradation of cell cycle proteins	81	15
Regulation of mitotic cell cycle	81	15

Supplementary Table 6: Gene Set Enrichment Analysis in the G1b^{low} or G2/M cells for stem cell profiles

Gene sets significantly enriched with the G1b^{low}and G2/M-profiles. Gene Set Enrichment Analysis (GSEA, gene set permutation analysis, NOM p-value ≤ 0.05, FDR q-value ≤ 0.05).

(NOM p val: nominal p-value; FDR q-val: false discovery rate q-value.)

(**A**) Positive enrichment of stem cell signatures with the G1b^{low}-profile;

(**B**) profiles of mature or late progenitor hematopoietic cells are positively enriched with the G2/M-profile (negative enrichment with G1b^{low}).

Supplementary Table 6A: Enrichment in G1b^{low}

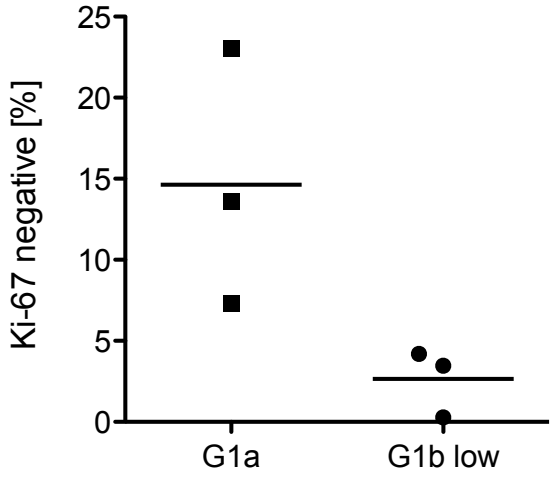
Gene set name	NOM p-val	FDR q-val
JAATINEN_HEMATOPOIETIC_STEM_CELL_UP	0	0
Eppert HSC-R	0	0.0059
GEORGANTAS_HSC_MARKERS	0	0.0063
Eppert LSC-R	0.03333	0.0479
GENTLES_LEUKEMIC_STEM_CELL_UP	0.1670	0.1715
JAATINEN_HEMATOPOIETIC_STEM_CELL_DN	0.1571	0.3346
IVANOVA_HEMATOPOIESIS_STEM_CELL_LONG_TERM	0.3663	0.5696
IVANOVA_HEMATOPOIESIS_EARLY_PROGENITOR	0.6363	0.6351
IVANOVA_HEMATOPOIESIS_INTERMEDIATE_PROGENITOR	0.5120	0.6509
IVANOVA_HEMATOPOIESIS_STEM_CELL	0.9006	0.8355

Supplementary Table 6B: Enrichment in G2/M

Gene set name	NOM p-val	FDR q-val
GAL_LEUKEMIC_STEM_CELL_DN	0	0
GENTLES_LEUKEMIC_STEM_CELL_DN	0.0233	0.0107
IVANOVA_HEMATOPOIESIS_STEM_CELL_SHORT_TERM	0.0163	0.0146
IVANOVA_HEMATOPOIESIS_MATURE_CELL	0.0055	0.0421
IVANOVA_HEMATOPOIESIS_LATE_PROGENITOR	0.0811	0.1943
GAL_LEUKEMIC_STEM_CELL_UP	0.9778	0.9675

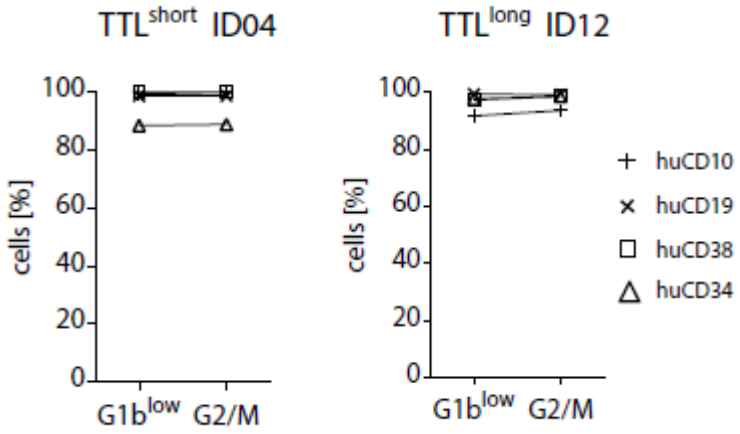
Supplementary Figure 1: G1a sorted cells comprise Ki-67 negative, resting (G0) cells

Percentages of cells staining negative for the proliferation marker Ki-67 (measured by flowcytometry) in G1a and G1b^{low} sorted subfractions of xenograft ALL samples (N=3, individual values and respective means are shown; T-test; significance, p= 0.064), showing that Ki-67 negative, resting G0 cells are part of the G1a subfraction.



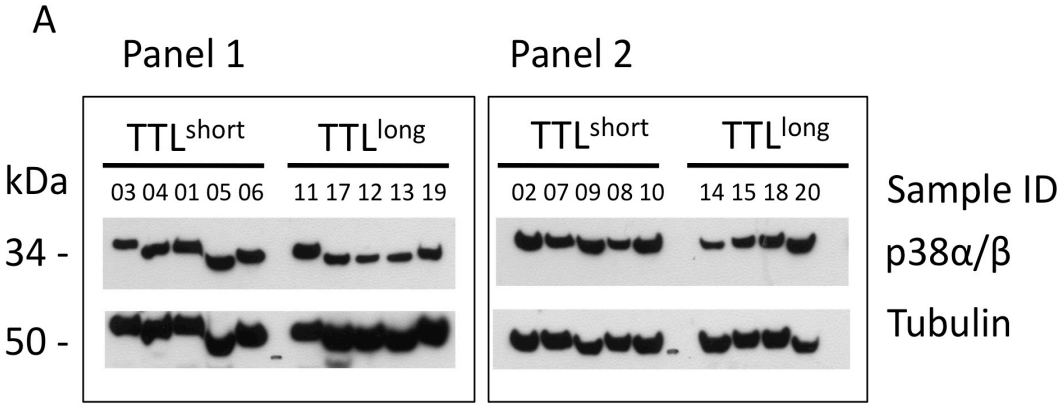
Supplementary Figure 2: Surface marker expression in sorted G1b^{low} and G2/M cells

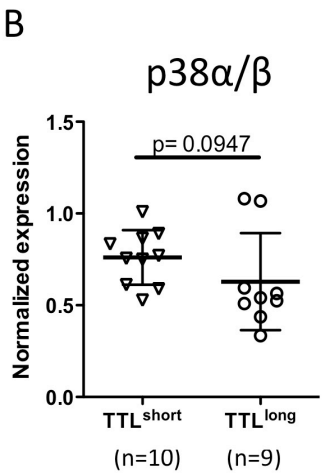
Similar expression of ALL surface markers in cell cycle annotated subfractions by flow cytometry. Percentages of huCD10, huCD19, huCD38, and huCD34 positive leukemia cells sorted into G1b^{low} and G2/M cell cycle fractions.

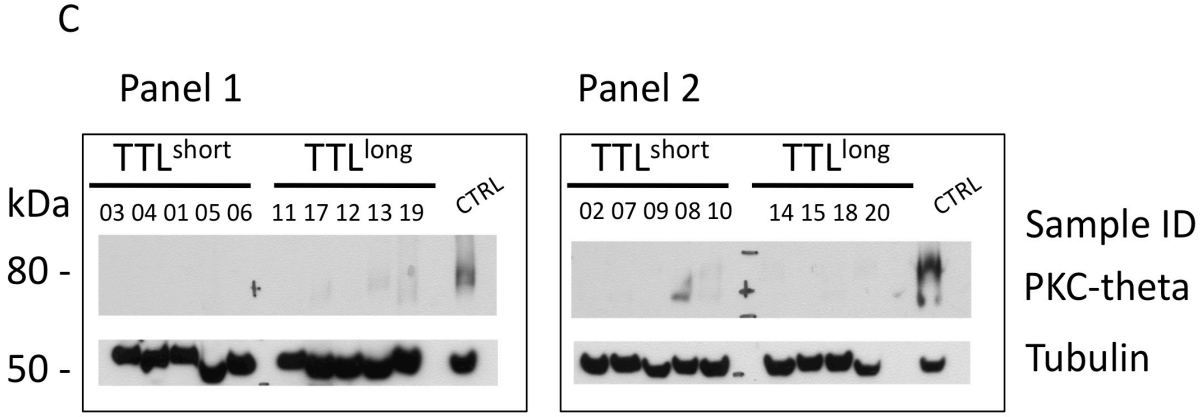


Supplementary Figure 3: p38 and PKC-theta expression analysis

(A) Western blot analysis of MAP kinase p38α/β in the TTL^{short} (N=10) and TTL^{long} (N=9) samples used for the detection of ROS by flowcytometry. **(B)** Normalized quantity of p38α/β according to Tubulin expression. Mann Whitney test; p, significance. **(C)** Western blot analysis of PKC-theta in the same TTL^{short} (N=10) and TTL^{long} (N=9) samples as in A. CTRL: positive control, Jurkat T-ALL cell line.







Supplementary Methods

NOD/SCID huALL

Twenty patient-derived xenograft samples established by transplantation of patient ALL cells onto NOD/SCID mice (NOD.CB17-*Prkdcscid*/J, Charles River, Sulzfeld, Germany) as previously described[1, 2] were used in this study. Patient samples have been obtained after informed consent in accordance with the institution's (Ulm University) ethical review board; all animal experiments were approved by the appropriate authority (Regierungspräsidium Tübingen) and carried out following the institutional and national guides for the care and use of laboratory animals. Patient characteristics are summarized in Supplementary Table 1. Mice were sacrificed upon clinical disease manifestation unless differently specified. Presence of huALL cells in peripheral blood (PB), bone marrow (BM) or spleen was analyzed by flowcytometry (LSR-II cytometer, BD-Biosciences, Heidelberg, Germany; data analysis: FlowJo V. 8.7, Oregon, USA) staining for huCD45 (anti-CD45-PerCp, #347464), huCD19 (anti-CD19-Allophycocyanin, #555415) and murine CD45 (anti-CD45-R-phycoerythrin, #561087; all BD-Biosciences). Time to Leukemia (TTL) was calculated as time between transplantation and onset of leukemia as described previously.[2, 3] Immunophenotyping was carried out following standard procedures,[4] genetic aberrations were investigated as previously described and by Multiplex ligation-dependent probe amplification (MLPA; SALSA MLPA P335-B2 ALL-IKZF1 and P181-B1 Centromere probemix, MRC Holland, The Netherlands).[3, 5] Phospho-histone H3 (Ser10) positive cells were stained (anti-phospho-histone H3 (Ser10) antibody, clone 3H10, Merck Millipore, USA) and analyzed by flowcytometry gating on 4N cells. For BrdU labeling, leukemia bearing recipients were randomly grouped and received 3 doses of BrdU (1mg/dose, BD-Pharmigen).[6, 7] After 0 (pulse), 2 and 5 (chase) days, mice (n=3/time point) were sacrificed and cells isolated from BM and spleen, stained with huCD19 and anti-mouse CD45 (anti-CD19-Anemonia majano, #339190, anti-CD45- Allophycocyanin, #561018, BD-Biosciences) or

isotype antibodies and labeled using the FITC BrdU Flow Kit (BD-Pharmigen) following the manufacturer´s instructions. For limiting dilution analysis, xenograft cells isolated from spleens (TTL^{short}, N=2; TTL^{long}, N=2, identical passages) were transplanted (i.v., N=8 mice/group) at increasing numbers (10^5 to 10^1). Engraftment (≥1% huCD19+ cells in PB 25 weeks post-transplantation) was evaluated and LIC-frequencies calculated (ELDA software, http://bioinf.wehi.edu.au/software/elda/).[8]

Microarray Analysis

RNA of sorted ALL cells was isolated (TRIzol, #15596026, Invitrogen/ ThermoFisher Scientific, Waltham, USA), quality-analyzed (Agilent 2100 Bioanalyzer, Agilent Technologies, Santa Clara, USA) and arrayed (Affymetrix Human Genome-U133 Plus 2.0; Affymetrix 3'-IVT Express kit, Santa Clara, USA) according to manufacturer's instructions. Arrays were normalized (robust multiple-array average, RMA, R version 3.0.2),[9] differentially regulated genes identified (Shrinkage t-statistic, FDR q-val <0.05)[10] and pathways annotated using Graphite (http://graphiteweb.bio.unipd.it; REACTOME database). Gene set enrichment analysis (GSEA, http://www.broadinstitute.org/gsea/index.jsp) was performed using the TTL-profile[2] (http://www.ncbi.nlm.nih.gov/geo, GSE13576), "C2 curated gene sets" (NOM p-value ≤0.05, FDR q-value ≤0.05; http://www.broadinstitute.org/gsea/msigdb/collections. jsp), and published hematopoietic/leukemia stem cells signatures[11-16] (NOM p-value ≤0.05, FDR q-value ≤0.05). Array data are deposited (NCBI's Gene Expression Omnibus, (http://www.ncbi.nlm.nih.gov/geo, GSE71836).

Vital cell cycle staining, cell sorting and transplantation

Cell cycle staining was performed as previously described[17-19] labeling DNA/RNA with Hoechst (Hst, Molecular Probes, ThermoFisher Scientific) and Pyronin Y (PY, Polysciences, Hirschberg, Germany). Briefly, cells were resuspended in 1µg/ml Hst, 20mM HEPES, pH 7.2, 1gr/L glucose, 10% fetal calf serum, 50 µM Verapamil (Sigma-Aldrich, Steinheim, Germany), Hanks Balanced Salt Solution (Invitrogen/ ThermoFisher Scientific) (45 minutes, 37°C) and PY was added (3.3 µM, 45 minutes, 37°C). Cells were sorted (FACSAria II, BD-Biosciences), doublets removed (FSC-A/SSC-A, FSC-A/FSC-H gating); cells sorted based on FSC-A/SSC-A, FSC-A/FSC-H gating were used as control. Post-sorting analysis confirmed positions of sorted populations within sorting gates. Viable cells (trypan blue exclusion) were transplanted onto NOD/SCID mice (10^5 viable cells/recipient) or stained using huCD19 (anti-CD19-PerCp, #340421), huCD10 (anti-CD10- Allophycocyanin, #340923) huCD38 (anti-CD38- Allophycocyanin, #340439) and huCD34 (anti-CD34-PerCp, #340430) antibodies or corresponding isotype controls (all BD-Biosciences). Secondary recipients were transplanted with unsorted cells ($1x10^5$) isolated from mice with full-blown leukemia, which had been transplanted with $G1b^{low}$ or G2/M sorted cells.

Reactive oxygen species (ROS) staining and sorting

Cells were stained with CM-H2DCFDA (Invitrogen/ThermoFisher Scientific) (HBSS, 2% FCS, 0.5 µM, 15 minutes, 37°C). Cells incubated with 5 µM H_2O_2 or additional 1 mM N-acetylcysteine (Sigma-Aldrich) served as positive or positive-negative controls. DNA labeling was carried out using Hst as described. Cells were acquired on a Fortessa or LSR II cytometer (BD-Biosciences). Viable cells (FSC-A/SSC-A, FSC-A/FCS-H) were sorted (FACSAria II, BD-Biosciences) according to high or low ROS levels (upper/lower 15%). Post-sorting analysis confirmed high/low ROS levels. Viable cells

were estimated (trypan blue exclusion) and transplanted (10^5 viable cells/recipient); cells sorted based on FSC-A/SSC-A and FSC-A/FSC-H gates were used as control.

In vitro drug sensitivity assay

Sorted subfractions were incubated in medium (RPMI 1640 supplemented with 10% FCS (Conco, Wiesbaden, Germany), 1% L-glutamine and 1% penicillin (Life Technologies/ThermoFisher Scientific) without or with prednisolone or cytarabine (Pharmacy, University Medical Center Ulm) at indicated concentrations (24h, 37°C, humidified air, 5% CO_2). Cell death was assessed according to FSC/SSC criteria (FACSCalibur, BD-Biosciences), specific cell death was calculated as previously reported[20] 100 x (experimental dead cells (%) - dead cells in control (%)) / (100% - dead cells in control (%)).

Statistical analysis

Statistical analyses were carried out using Prism for Mac Version 5.0a (GraphPad Software). For transplantation experiments group sizes were chosen based on the availability of cells after sorting. Two animals, which died without leukemia engraftment, were excluded from analysis (Supplementary Table 3, ID12). Data are represented as mean ± SD unless differently specified. Data were analyzed using Mann-Whitney-test, Unpaired t-test with Welch's correction (two-tailed), one sample t-test or log-rank test (two-tailed), P values ≤ 0.05 were considered significant.

References to supplemental data:

1. Queudeville M, Seyfried F, Eckhoff SM, et al. Rapid engraftment of human ALL in NOD/SCID mice involves deficient apoptosis signaling. Cell Death Dis. 2012;3(e364.

2. Meyer LH, Eckhoff SM, Queudeville M, et al. Early Relapse in ALL Is Identified by Time to Leukemia in NOD/SCID Mice and Is Characterized by a Gene Signature Involving Survival Pathways. Cancer Cell. 2011;19(2):206-217.

3. Hasan MN, Queudeville M, Trentin L, et al. Targeting of hyperactivated mTOR signaling in high-risk acute lymphoblastic leukemia in a pre-clinical model. Oncotarget. 2015;6(3):1382-1395.

4. Bene MC, Castoldi G, Knapp W, et al. Proposals for the immunological classification of acute leukemias. European Group for the Immunological Characterization of Leukemias (EGIL). Leukemia. 1995;9(10):1783-1786.

5. Münch V, Trentin L, Herzig J, et al. Central nervous system involvement in acute lymphoblastic leukemia is mediated by vascular endothelial growth factor. Blood. 2017;130(5):643-654.

6. Thoman ML. Early steps in T cell development are affected by aging. Cell Immunol. 1997;178(2):117-123.

7. Rocha B, Penit C, Baron C, Vasseur F, Dautigny N, Freitas AA. Accumulation of bromodeoxyuridine-labeled cells in central and peripheral lymphoid organs: minimal estimates of production and turnover rates of mature lymphocytes. Eur J Immunol. 1990;20(8):1697-1708.

8. Hu Y, Smyth GK. ELDA: extreme limiting dilution analysis for comparing depleted and enriched populations in stem cell and other assays. J Immunol Methods. 2009;347(1-2):70-78.

9. Gautier L, Cope L, Bolstad BM, Irizarry RA. affy--analysis of Affymetrix GeneChip data at the probe level. Bioinformatics. 2004;20(3):307-315.

10. Opgen-Rhein R, Strimmer K. Accurate ranking of differentially expressed genes by a distribution-free shrinkage approach. Stat Appl Genet Mol Biol. 2007;6(Article 9.

11. Eppert K, Takenaka K, Lechman ER, et al. Stem cell gene expression programs influence clinical outcome in human leukemia. Nat Med. 2011;17(9):1086-1093.

12. Ivanova NB, Dimos JT, Schaniel C, Hackney JA, Moore KA, Lemischka IR. A stem cell molecular signature. Science. 2002;298(5593):601-604.

13. Georgantas RW, 3rd, Tanadve V, Malehorn M, et al. Microarray and serial analysis of gene expression analyses identify known and novel transcripts overexpressed in hematopoietic stem cells. Cancer Res. 2004;64(13):4434-4441.

14. Gal H, Amariglio N, Trakhtenbrot L, et al. Gene expression profiles of AML derived stem cells; similarity to hematopoietic stem cells. Leukemia. 2006;20(12):2147-2154.

15. Jaatinen T, Hemmoranta H, Hautaniemi S, et al. Global gene expression profile of human cord blood-derived CD133+ cells. Stem Cells. 2006;24(3):631-641.

16. Gentles AJ, Plevritis SK, Majeti R, Alizadeh AA. Association of a leukemic stem cell gene expression signature with clinical outcomes in acute myeloid leukemia. JAMA. 2010;304(24):2706-2715.

17. Shapiro HM. Flow cytometric estimation of DNA and RNA content in intact cells stained with Hoechst 33342 and pyronin Y. Cytometry. 1981;2(3):143-150.

18. Wilpshaar J, Falkenburg JH, Tong X, et al. Similar repopulating capacity of mitotically active and resting umbilical cord blood CD34(+) cells in NOD/SCID mice. Blood. 2000;96(6):2100-2107.

19. Darzynkiewicz Z, Juan G, Srour EF. Differential staining of DNA and RNA. Curr Protoc Cytom. 2004;Chapter 7:Unit 7.3.

20. Friesen C, Herr I, Krammer PH, Debatin KM. Involvement of the CD95 (APO-1/FAS) receptor/ligand system in drug-induced apoptosis in leukemia cells. Nat Med. 1996;2(5):574-577.