Figure S1. Heatmaps of megakaryocytic and erythroid differentiation markers in FLI1 depleted HEL cells. A comparison of DEGs in FLI1 knockdown HEL cells (shFLI1) vs scrambled control cells associated with (A) megakaryocytic and (B) erythroid differentiation. \*\*P<0.01 and \*\*\*P<0.001. FLI1, friend leukemia integration 1; DEGs, differentiation expression genes; sh, short hairpin.





Figure S2. Regulation of erythropoiesis by FLI1. (A) Flow cytometry analysis for expression of megakaryocytic (CD41a/CD61) and erythroid (CD71/CD235a) markers in shFLI1 cells versus scrambled controls. The same unstained control was used for all antibodies. (B) Percentage of the indicated differentiation markers in three independent experiments. FLI1, friend leukemia integration 1; CD, cluster of differentiation; sh, short hairpin.



Figure S3. Regulation of erythroid and megakaryocytic differentiation by GATA1. Flow cytometry for expression of megakaryocytic (CD41a/CD61) and erythroid (CD71/CD235a) markers in shGATA1-2 versus controls. The same unstained control was used for all antibodies. CD, cluster of differentiation; sh, short hairpin; GATA, GATA binding protein.



Figure S4. Regulation of erythroid and megakaryocytic differentiation by GATA2. Flow cytometry for expression of megakaryocytic (CD41a/CD61) and erythroid (CD71/CD235a) markers in shGATA2-1 versus controls. The same unstained control was used for all antibodies. GATA, GATA binding protein; CD, cluster of differentiation; sh, short hairpin.



Figure S5. Regulation of CD61 promoter by GATA2. (A) Network map of interaction between FLI1 and other transcription factors, using the STRING database. (B) The promoter sequence of *CD61* gene. The GATA2 binding site is highlighted. (C) High affinity binding of GATA2 to the promoter of *CD61(ATGAB3)* gene in K562 cells. CD, cluster of differentiation; GATA, GATA binding protein; FLI1, friend leukemia integration 1.



Figure S6. Regulation of the ERG transcription by GATA1/2. (A) The promoter of the human *ERG* with two potential GATA binding sites. (B) High affinity binding of GATA2 to the promoter of *ERG* gene. ERG, ETS transcription factor ERG; ETS, E26 transformation-specific; GATA, GATA binding protein.

## А

TGTTCATCAGCACGCATATTGTTTTTAGCACTGTTCTATATTG ATATACTGATGATGATGAGAAACGTTGGCAGCGTATTAAAAAACTTTTAGAGTAT TAAAAAAGAGTCATTGGCCTGTGGGCTACTGATTTTATTGAATAGGTTCAGAACCT GTTTACTTTAAAGCATTCCCCTAAATGTTAAGGGTTCACTATGGTGAGACTTGAAAA TTAGTGGCTAATTGGAAGATTTCAAAATCCAGTGAAATATCTTGGATCTGGAATATT TGGAGAATAATTAGAAAGAAAAGGAACCAAAATATGCATTTGGTAGTTAAGGAGA TTCAGATCGAATCTTTTTGAAGGCCATGTGAACTGGAGTATGGGGGACTTCTGTGTGA TTTGTGAGCACATTCAATACTAAAGGAAATGCAATCGACTTTGCAAATGACGATTC GAGCACAGAGT<mark>GGATAA</mark>ACTGACAAGACCCTATTACTAAATACCCACTTTGAAATA -9951 - 946 Binding site TACATTCTGTTCTTTGTACCTCAGGGGGACAAAAAGGGTGCATGCTTGTCAGAAATTT AATCTGTTTTCAATATTTATTTTATTGGTATCTTCTCTTGGCCACCTATGGAGAGGT GGGCTTGTATCCCAACTACCATGGTGTGCCTGATTGTTCAAGAAATTTCCTAGGAAT GCATTTGTAGTTTCACGAAGGCTGTCCATCTTAACAGGGGAAAAACTTCCTTGGCTG GAGTCTCACATTTTAATGAGCTCATTTTGGCATCTCTAGGGTTAAAGATCCTCTCAG AACCTATAGGTACTGGAAAAGGCGGTTTCTAAACTCAGCTGCTCAGGTCCATTTTAT GGAAAGTGCGCGGGGGGGGGGGGCACACTCACCCTGCCCACATCCAACCCTGAGCCT GGCAGACTTTTTGGAATGTCTGGGAGCTAAGGGCTTTGCTTCATGGAGCAGAATTC TGAAGCAAGAAAAAGAGAAAGTTATAGACTAAACCACAGAAATGTAAACACGTCT GTGTGCTATGGTCAATAAAACTGCATGTTAATAGCGACCAATTAATAGATTATGTT GCTCGGCCTTAAAAGTTGAGGGAGTTTTAATTATTATTTTTCAAATTAAAGGAGTGC TTCACTTGGTCGGAATGGGGAGAGTGTGCAAGAGATCGCTGCGGGACAGGTT CCTAGAGATCGCTCCGGGACGGTCGTGACGGCCCCCGAGGGACATGAGAGAA **GAGGAGCGGCGCTCAG**GTAAG



Figure S7. Regulation of erythroid and megakaryocytic differentiation by ERG. Flow cytometry for expression of megakaryocytic (CD41a/CD61) and erythroid (CD71/CD235a) markers in PCDNA-ERG versus control PCDNA transfected cells. The same unstained control was used for all antibodies. ERG, ETS transcription factor ERG; ETS, E26 transformation-specific; CD, cluster of differentiation.



Figure S8. Regulation of erythroid and megakaryocytic differentiation by LDB1. Flow cytometry for expression of megakaryocytic (CD41a/CD61) and erythroid (CD71/CD235a) markers in shLDB1-sh3 cells versus scrambled controls. The same unstained control was used for all antibodies. LDB1, LIM domain binding 1; CD, cluster of differentiation; sh, short hairpin.

