

A novel single nucleotide polymorphism (SNP) of ARHGEF12 involved in the susceptibility to chemotherapy-induced anemia in acute lymphoblastic leukemia (ALL) patients

SCMC-ALL-2005 cohort including 452 patients



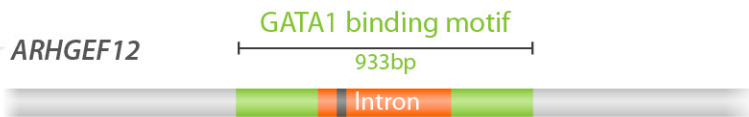
Genome-wide association study (GWAS) analyses

281 genes

12 genes highly expressed in pre-erythroid committed

23 genes highly expressed in erythroid committed

ARHGEF12 encodes a RhoA guanine nucleotide exchange factor which is essential for embryonic erythropoiesis



rs10892563 impairs GATA1 mediated trans-regulation of *ARHGEF12*

rs10892563

- A SNP significantly associated with patients who need RBC transfusion ($P=3.469E-03$, odds ratio 5.864)
- rs10892563 homozygosity is associated with a ~61% reduction in *ARHGEF12* expression ($P=0.0088$)



Reduced erythropoiesis at the pro-erythroblast phase