

**Table S1. Fine-mapping known K562 translocations.**

Source	Reported K562 translocation	Evidence in Hi-C data?	Breakpoint region (hg18)	Annotated gene closest to predicted breakpoint
K562 Karyotype [1]	t(9;22)	Yes	chr9:132,550,000–132,600,000 chr22:21,950,000–22,000,000	chr9: <i>ABL1</i> chr22: <i>BCR</i>
	t(3;10)	Yes	chr3:48,150,000 – 48,200,000 chr10:87,800,000 – 87,850,000	chr3: <i>CDC25A</i> (cell cycle division 25A isoform A) chr10: <i>GRID1</i>
	t(10;17)	Yes	chr10:42,200,000–42,250,000 chr17:22,150,000–22,200,000	chr10: <i>BC039000</i> (Homo sapiens cyclin Y-like 2) chr17: enhancer marks in K562
	t(9;17)	Yes	chr9:20,150,000–20,200,000 chr17:22,150,000–22,200,000	chr9: <i>MLLT3</i> (myeloid/lymphoid or mixed-lineage leukemia, translocated to 3) chr17: enhancer marks in K562
	t(5;6)	Yes	chr5:69,000,000–69,050,000 chr6:27,000,000–27,050,000	chr5: <i>GUSBP3</i> chr6: <i>GUSBP1</i>
	t(9;13)	No	-	-
	t(1;21)	No	-	-
	t(2;19)	No	-	-
	t(19;20)	No	-	-
	t(6;11)	No	-	-
t(12;19)	No	-	-	
K562 Next-Gen Sequencing [2, 3],*	t(9;22) 2	Yes	chr9: 133,050,000–133,100,000 chr22: 15,650,000–15,700,000	chr9: <i>NUP214</i> chr22: <i>XKR3</i>
	t(1;11)	No	-	-

\*Targeted sequencing of 476 cancer-related gene cDNA transcripts only; did not detect non-coding breakpoints or translocations affecting other genes.

1. Naumann S, Reutzel D, Speicher M, Decker HJ. (2001) Complete karyotype characterization of the K562 cell line by combined application of G-banding, multiplex-fluorescence in situ hybridization, fluorescence in situ hybridization, and comparative genomic hybridization. *Leuk Res* 25: 313-22.
2. Ge H, Liu K, Juan T, Fang F, Newman M, Hoeck W. (2011) FusionMap: detecting fusion genes from next-generation sequencing data at base-pair resolution. *Bioinformatics* 27: 1922-1928.
3. Levin JZ, Berger MF, Adiconis X, Rogov P, Melnikov A, Fennell T, Nusbaum C, Garraway LA, Gnirke A. (2009) Targeted next-generation sequencing of a cancer transcriptome enhances detection of sequence variants and novel fusion transcripts. *Genome Biol* 10: R115.