

Supplementary Table 4: Cases with additional information identified by MPseq. AML genes associated with an SV, deletion or gain indicated in red that were not recognized by karyotype or FISH. This may include identification of fusion partner genes.

Paper ID	MPseq identified new info	AML Genes Rearranged by SVs	AML Genes in Deletions	AML Genes in Gains
NK-1	No	N/A	N/A	N/A
NK-2	Yes	None	FAT1	MYB, CEP43 BCR
NK-3	No	N/A	N/A	N/A
NK-4	No	N/A	N/A	N/A
NK-5	No	N/A	N/A	N/A
NK-6	No	N/A	N/A	N/A
NK-7	Yes	N/A	DNMT3A, CEBPA	N/A
NK-8	No	N/A	N/A	N/A
NK-9	No	N/A	N/A	N/A
NK-10	No	N/A	N/A	N/A
NK-11	Yes	N/A	N/A	CCDC26
NK-12	No	N/A	N/A	N/A
NK-13	No	N/A	N/A	N/A
NK-14	N/A	N/A	N/A	N/A
NK-15	No	N/A	N/A	N/A
NK-16	No	N/A	N/A	N/A
NK-17	No	N/A	N/A	N/A
NK-18	No	N/A	N/A	N/A
NK-19	Yes	N/A	NF1, SUZ12	CCDC26
NK-20	No	N/A	N/A	N/A
NK-21	No	N/A	N/A	N/A
NK-22	No	N/A	N/A	N/A
NK-23	No	N/A	N/A	N/A
NK-24	No	N/A	N/A	N/A
NK-25	No	N/A	N/A	N/A
NK-26	No	N/A	N/A	N/A
NK-27	No	None	N/A	N/A
NK-28	Yes	N/A	NF1	N/A
NK-29	No	N/A	N/A	N/A
NK-30	No	N/A	N/A	N/A
NK-31	No	N/A	N/A	N/A
NK-32	No	N/A	N/A	N/A
NK-33	No	N/A	N/A	N/A
NK-34	Yes	N/A	N/A	KMT2A partial tandem dup
NK-35	No	N/A	N/A	N/A
NK-36	No	N/A	N/A	N/A
NK-37	No	N/A	N/A	N/A

7q-53	Yes	None	FHIT , IKZF1, CUX1, KMT2E, KMT2C, EZH2, TP53, MYH1, SETBP1	N/A
7q-54	No	N/A	IKZF1, CUX1, KMT2E, KMT2C, EZH2 PTEN ETV6, CDKN1B AEBP2	N/A
7q-55	Yes	CCDC26::BCL11B	CUX1, KMT2E, KMT2C, EZH2	MYB , KMT2A, CBL, CCDC26
7q-56	Yes	MECOM::ETV6	EZH2, CUX1, KMT2E, NF1	N/A
7q-57	No	None	IKZF1, CUX1, KMT2E, KMT2C, EZH2	MYC, TRPS1, RAD21, RUNX1T1, KAT6A,FGFR1, BCR
7q-58	No	None	IKZF1, CUX1, KMT2E, KMT2C, EZH2	N/A
7q-59	Yes	None	CUX1, KMT2E, KMT2C, EZH2	KMT2A, CBL
5q-65	Yes	None	TET2 , FAT1 , APC, EGR1, CBFB, ZC3H1B	iAMP21
5q-66	Yes	None	FIP1L1, CHIC2,PDGFRA, KIT, APC, EGR1, DIAPH1, NR3C1, CSNK1A1, CSF1R, PDGFRB, RPS14, SPARC, NPM1, DDX41, CREBBP, MYH11, CBFB, ZC3H18, NF1 , SUZ12	TERT

5q-67	Yes	None	APC, EGR1, DIAPH1, NR3C1, CSNK1A1, CSF1R, PDGFRB, RPS14, SPARC, NPM1, NUP98, TP53, NF1 , SUZ12, RARA	FIP1L1, CHIC2, PDGFRA, KIT, TET2, FAT4, JARID2, DEK, MYB
5q-68	No	None	APC, EGR1, DIAPH1, NR3C1, CSNK1A1, CSF1R, PDGFRB, RPS14, SPARC	PRDM16, CSMD2, CSF3R, MPL, JAK1, RBM15, NRAS, ARNT, ENAH, TPO, DNMT3A, ASXL2, HOXD13, SF3B1, IDH1, INPP5D, TERT, NPM1, DDX41, JARID2, DEK, MYB, CEP43, PCM1, FGFR1, KAT6A, RUNX1T1, TRPS1, RAD21, MYC, JAK2, MLLT3, CDKN2A, CNTRL, ABL1, NUP214, NUP98, WT1, KMT2A, CBL, ZMYM2, FLT3, RB1, FOXN3, RCOR1, MGA, PML, IDH2, SETBP1, CALR, JAK3, CEBPA, U2AF2, ASXL1, L3MBTL1, SGK2, BCR, MRTFA, EP300
5q-148	Yes	MECOM::SATB1	ASXL2 , APC, CSNK1A1, CSF1R, PDGFRB, RPS14, SPARC, IKZF1	RUNX1, U2AF1
5q-147	Yes	RUNX1r	TET2 , FHIT, FOXP1, KMT2C, ETV6, CDKN1B, AEBP2	iAMP21

5q/7q-84	Yes	MECOMr	GATA2, RPN1, MLF1, MECOM, EGR1, DIAPH1, NR3C1, CSNK1A1, CSF1R, PDGFRB, RPS14, SPARC, NPM1, DDX41, CUX1, KMT2E, KMT2C, EZH2, TP53, NF1	MECOM BCR, MRTFA, EP300
5q/7q-85	Yes	RUNX1r, ANKRD26r	TET2, FAT4, FAT1 , APC, EGR1, DIAPH1, NR3C1, CSNK1A1, CSF1R, PDGFRB, RPS14, SPARC, NPM1, DDX41, IKZF1, CUX1, KMT2E, KMT2C, EZH2, PRKG1, ETV6, CDKN1B, AEBP2, KRAS, NF1 , SUZ12, RARA	N/A
5q/7q-87	Yes	ASXL1r	TET2 , APC, EGR1, DIAPH1, NR3C1, CSNK1A1, CSF1R, PDGFRB, RPS14, SPARC, CUX1, KMT2E, EZH2, KMT2C, PCM1, MGA, CBFB, ZC3H18, TP53, ASXL1 , L3MBTL1, SGK2	PRDM16, CSMD2, CSF3R, NPM1, DDX41, FGFR1, KAT6A, RUNX1T1, TRPS1, RAD21, MYC, CREBBP

5q/7q-88	Yes	None	APC, EGR1, DIAPH1, NR3C1, CSNK1A1, CSF1R, PDGFRB, RPS14, SPARC, JARID2, CEP43, CUX1, KMT2E, EZH2, KMT2C, ABL1, NUP214, ETV6, CDKN1B, RB1, RBBP6, CBFB, ZC3H18, SETBP1 , SALL3, L3MBTL1, SGK2, BCR	PRDM16, CSMD2, CSF3R , MPL, JAK1, IKZF1
5q/7q-89	Yes	None	APC, EGR1, DIAPH1, NR3C1, CSNK1A1, CSF1R, PDGFRB, RPS14, SPARC, IKZF1, CUX1, KMT2E, EZH2, KMT2C, AEBP2	PRDM16, CSMD2, CSF3R , MPL
5q/7q-90	Yes	None	APC, EGR1, DIAPH1, NR3C1, CSNK1A1, CSF1R, PDGFRB, RPS14, SPARC, NPM1, DDX41, CUX1, KMT2E, EZH2, KMT2C, NUP98, WT1 , ZMYM2, FLT3, RB1, TP53, MYO18A, NF1, SUZ12, RARA, PPM1D, SRSF2, CEBPA	KMT2A, CBL

5q/7q-91	Yes	None	EGR1, DIAPH1, NR3C1, CSNK1A1, CSF1R, PDGFRB, RPS14, SPARC, JARID2, DEK, CUX1, KMT2E, EZH2, KMT2C, NUP98, WT1 , TP53, MYO18A, NF1, SUZ12, CEBPA, L3MBTL1, SGK2	KMT2A, CBL CALR JAK3 U2AF2
5q/7q-92	Yes	NF1::RAB11FIP3	FHIT, FOXP1 , FIP1L1, CHIC2, PDGFRA, KIT, APC, EGR1, DIAPH1, NR3C1, CSNK1A1, CSF1R, PDGFRB, RPS14, SPARC, IKZF1, CUX1, KMT2E, EZH2, KMT2C, AEBP2, KRAS, TP53, SALL3	PRDM16, TET2, FAT4, FAT1
5q/7q-93	Yes	CBL	APC, EGR1, DIAPH1, NR3C1, CSNK1A1, CSF1R, PDGFRB, RPS14, SPARC, CUX1, KMT2E, EZH2, KMT2C, WT1	SSBP2 MYB, CEP43 NUP98 KMT2A, CBL ZMYM2, FLT3, RB1

5q/7q-94	Yes	FHIT, MECOM::BCHE	FHIT, APC, EGR1, DIAPH1, NR3C1, CSNK1A1, CSF1R, PDGFRB, RPS14, SPARC, NPM1, MYB, CEP43, IKZF1, CUX1, KMT2E, EZH2, KMT2C, ETV6, CDKN1B, AEBP2, TP53	MECOM amp, KRAS amp
5q/7q-95	Yes	None	FHIT, FOXP1, GATA2, RPN1, TERT, SSBP2, APC, EGR1, DIAPH1, NR3C1, CSNK1A1, CSF1R, PDGFRB, RPS14, SPARC, NPM1, DDX41, CEP43, IKZF1, CUX1, KMT2E, EZH2, KMT2C, ETV6, CDKN1B, AEBP2, SOCS2, CREBBP, MYH11, RBBP6, CBFB, ZC3H18, TP53, SETBP1 , SALL3, L3MBTL1, SGK2, RUNX1, U2AF1	PCM1, FGFR1, KAT6A, RUNX1T1, TRPS1, RAD21, MYC KMT2A, CBL
5q/7q-96	Yes	RPN1::MECOM + MECOMr	GATA2, RPN1, MLF1, SSBP2, APC, EGR1, DIAPH1, NR3C1, CSNK1A1, CSF1R, PDGFRB, RPS14, SPARC, NPM1, DDX41, CUX1, KMT2E, EZH2, KMT2C, ETV6, CDKN1B, AEBP2	MECOM amp, KRAS amp

t(9;11)-104	No	MLLT3::KMT2A	None	None
t(9;11)-105	No	MLLT3::KMT2A	N/A	N/A
inv(16)-106	No	MYH11::CBFB	N/A	N/A
inv(16)-107	No	MYH11::CBFB	N/A	N/A
inv(16)-108	No	MYH11::CBFB	N/A	FHIT, FOXP1, GATA2, RPN1, MLF1, MECOM TERT, APC, EGR1, DIAPH1, NR3C1, CSNK1A1, CSF1R, PDGFRB, RPS14, SPARC, NPM1, DDX41 PCM1, FGFR1, KAT6A, RUNX1T1, TRPS1, RAD21, MYC ETV6, CDKN1B, AEBP2, KRAS, HMGA2, SOCS2, SH2B3, PTPN11 ZMYM2, FLT3, RB1 FOXN3, RCOR1 MGA, PML, IDH2 CALR, JAK3, CEBPA, U2AF2 ASXL1, L3MBTL1, SGK2 RUNX1, U2AF1 BCR, MRTFA, EP300
inv(3)-109	No	GATA2::MECOM, BCR::ABL1	N/A	N/A
inv(3)-110	Yes	GATA2::MECOM	WT1	N/A

inv(3)-111	No	GATA2::MECOM	N/A	FHIT, FOXP1, GATA2, RPN1, MLF1, MECOM DHX15, FIP1L1, CHIC2, PDGFRA, KIT, TET2, FAT4, FAT1 TERT, APC, EGR1, DIAPH1, NR3C1, CSNK1A1, CSF1R, PDGFRB, RPS14, SPARC, NPM1, DDX41 IKZF1, CUX1, KMT2E, EZH2, KMT2C MGA, PML, IDH2 TP53, MYO18A, NF1, SUZ12, RARA, PPM1D, SRSF2 CALR, JAK3, CEBPA, U2AF2 RUNX1, U2AF1
KMT2Ar-112	Yes	KMT2A::MLLT6, MECOM::ZBBX	KMT2A, CBL , TP53	None
KMT2Ar-113	No	KMT2A::ELL	N/A	N/A
KMT2Ar-114	No	KMT2A::MLLT10	N/A	N/A
KMT2Ar-115	Yes	KMT2A::MLLT10	MRTFA, EP300	N/A
KMT2Ar-116	No	KMT2A::MLLT10	None	TRPS1, RAD21, MYC PPM1D, SRSF2 RUNX1, U2AF1
t(15;17)-117	No	PML::RARA	N/A	RUNX1T1, TRPS1, RAD21, MYC
t(15;17)-118	No	PML::RARA	N/A	N/A
t(15;17)-119	No	PML::RARA	N/A	PCM1, FGFR1, KAT6A, RUNX1T1, TRPS1, RAD21, MYC RUNX1, U2AF1
t(15;17)-120	N/A	PML::RARA	N/A	N/A
t(6;9)-121	No	DEK::NUP214	N/A	N/A
NUP98/KDM5A-122	Yes	NUP98::KMD5A	NUP98 (partial)	JARID2, DEK, MYB, CEP43 RUNX1, U2AF1
NUP98/KDM5A-123	Yes	NUP98::KMD5A	RUNX1	N/A

NUP98/KDM5A-124	Yes	NSD1::NUP98	N/A	N/A
NUP98/KDM5A-125	Yes	NUP98::KMD5A	N/A	N/A
NUP98/NSD1-126	Yes	NSD1::NUP98, MLLT10::USH2A	NUP98 (partial)	PCM1, FGFR1, KAT6A, RUNX1T1, TRPS1, RAD21, MYC
NUP98/NSD1-127	Yes	NSD1::NUP98	N/A	PCM1, FGFR1, KAT6A, RUNX1T1, TRPS1, RAD21, MYC ZMYM2, FLT3, RB1
KAT6A r-128	Yes	KAT6A::SORBS3	N/A	N/A
Simple K-129	Yes	N/A	N/A	MYC amplification
Simple K-130	Yes	N/A	DNMT3A, CEBPA	DHX15, FIP1L1, CHIC2, PDGFRA, KIT, TET2, FAT4, FAT1
Simple K-131	No	N/A	RB1	N/A
Simple K-132	Yes	ZMYND11::MBTD1	N/A	IKZF1, CUX1, KMT2E, EZH2, KMT2C
Simple K-133	Yes	N/A	IKZF1 , ETV6, CDKN1B, RB1, CBFB, CEBPA	N/A
Simple K-134	No	N/A	GATA2, RPN1	N/A
Simple K-135	No	N/A	N/A	N/A
Trisomy 8-136	No	N/A	N/A	PCM1, FGFR1, KAT6A, RUNX1T1, TRPS1, RAD21, MYC
Trisomy 8-137	No	N/A	N/A	PCM1, FGFR1, KAT6A, RUNX1T1, TRPS1, RAD21, MYC
Trisomy 8-138	No	N/A	N/A	N/A
Trisomy 8-139	No	N/A	N/A	PCM1, FGFR1, KAT6A, RUNX1T1, TRPS1, RAD21, MYC ZMYM2, FLT3, RB1
Trisomy 8-140	No	N/A	N/A	N/A

Trisomy 8-141	No	N/A	N/A	PCM1, FGFR1, KAT6A, RUNX1T1, TRPS1, RAD21, MYC
Atypical CK-142	No	None	PRDM16, CSMD2, CSF3R, JAK2, MLLT3, CDKN2A, CNTRL, ABL1, NUP214, CBFB, ZC3H18	SETBP1
Atypical CK-143	No	ATM::TARS	N/A	N/A
Atypical CK-144	No	None	N/A	NUP98 KMT2A, CBL
Atypical CK-145	Yes	N/A	RUNX1	ZMYM2, FLT3, RB1, U2AF1, BCR, MRTFA, EP300
Atypical CK-146	Yes	NF1::TG	None	PCM1, FGFR1, KAT6A, RUNX1T1, TRPS1, RAD21, MYC