

# Somatic genetic alterations predict hematological progression in GATA2 deficiency

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## Supplemental legends

### Figure S1. Overall survival

A. Overall survival for the 78 GATA2 deficiency patients censored at the last follow-up or for transplanted patients at the allograft day. B. Overall survival according to haematological spectra (n=12 spectrum 0, n=47 spectrum 1, n=19 spectrum 2).

### Figure S2. Comparison of molecular and cytogenetic profile between GATA2 deficient patients and AML patients

A. The frequency of mutated genes and cytogenetic alterations in 78 GATA2 deficient patient (blue) and 500 AML patient (red) samples. B. Mutational profiles based on base pair substitution and insertion/deletion of somatic mutations identified in GATA2 deficient patients.

### Figure S3. Gating strategy to evaluate the repartition of HSPC compartment

A. Characterization of HSPC compartment by flow cytometry using CD34, CD38, CD135 and CD45RA markers. EMP, MPP and LMPP populations are defined in CD34+ CD38-/low compartments and MEP, CMP and GMP in CD34+ CD38+ progenitor compartment. A representative example of each entity (NBM CD34+, AML and GATA2 patients) is shown.

### Figure S4. Blood count parameters associated with STAG2 mutations

Comparison of hemoglobin level, platelet, granulocyte, monocyte counts between *STAG2* mutated and unmutated patients in spectrum 1. ). P-values are calculated using unpaired t-tests; ns : not significant

### Figure S5. STAG2 mutations visualized on IGV

Examples of *STAG2* mutations identified in patient #51, #31, #56 and #48 samples, visualized on IGV from bam files.

### Table S1. Listing of sequenced genes and antibodies used for targeted NGS and flow cytometry and marker positivity to determined HSPC subpopulations

HSC : Hematopoietic Stem Cells ; MPP : Multipotent Progenitors; EMP : Erythroid/Myeloid Progenitors; LMPP : Lymphoid Myeloid Primed Progenitors; HPC : Hematopoietic Progenitor Cells; CMP : Common Myeloid Progenitors; MEP : Megakaryocyte Erythroid Progenitors; GMP : Granulocyte Macrophage Progenitors

### Table S2. Biological and clinical features of GATA2 deficient patients

### Table S3. Somatic GATA2 mutations in 4 GATA2 deficient patients

Listing of somatic *GATA2* mutations (HGVS p. and type) associated with germline *GATA2* mutations.

### Table S4. Somatic variant information and mention of patients characterized by flow cytometry

(Supplemental Table 4 .xlsx file)

### Table S5. Complete blood count data information

**Table S1.****Targeted gene panel**

Gene ID	NM	Gene ID	NM	Gene ID	NM
AFDN	NM_001366320.2	FLT3	NM_004119.3	PIK3C2B	NM_002646.4
ANKRD26	NM_014915.3	GATA1	NM_002049.4	PIK3CG	NM_002649.3
ASXL1	NM_015338.6	GATA2	NM_032638.5	PPM1D	NM_003620.4
ASXL2	NM_018263.6	GIGYF2	NM_015575.4	PRPF8	NM_006445.4
ATM	NM_000051.4	H1-4	NM_005321.3	PTPN11	NM_002834.5
BCOR	NM_001123383.1	HAX1	NM_006118.4	RAD21	NM_006265.3
BCORL1	NM_021946.5	IDH1	NM_005896.4	RIT1	NM_006912.6
BIRC6	NM_016252.3	IDH2	NM_002168.4	RTEL1	NM_001283009.2
BRAF	NM_004333.6	IKZF1	NM_006060.6	RUNX1	NM_001754.5
BRINP3	NM_199051.3	JAK2	NM_004972.4	SAMD9	NM_017654.4
CALR	NM_004343.4	JAK3	NM_000215.4	SAMD9L	NM_152703.5
CBL	NM_005188.4	KAT6B	NM_012330.4	SBDS	NM_016038.4
CCND2	NM_001759.4	KDM5A	NM_001042603.3	SETBP1	NM_015559.3
CEBPA	NM_004364.5	KDM6A	NM_021140.4	SETD2	NM_014159.7
CHEK2	NM_001005735.2	KIT	NM_000222.3	SF1	NM_004630.4
CIC	NM_015125.5	KMT2D	NM_003482.4	SF3B1	NM_012433.4
CSF3R	NM_156039.3	KRAS	NM_004985.5	SH2B3	NM_005475.3
CSMD1	NM_033225.6	MBD4	NM_003925.3	SMARCA2	NM_003070.5
DDX41	NM_016222.4	MECOM	NM_001105077.4	SMC1A	NM_006306.4
DHX15	NM_001358.3	MED12	NM_005120.3	SMC3	NM_005445.4
DNMT3A	NM_022552.5	MGA	NM_001164273.2	SOS1	NM_005633.4
ELANE	NM_001972.4	MPL	NM_005373.3	SRSF2	NM_003016.4
EP300	NM_001429.4	MYC	NM_002467.6	STAG2	NM_001042749.2
ERCC2	NM_000400.4	NF1	NM_000267.3	TERT	NM_198253.3
ERCC6L2	NM_020207.7	NOTCH1	NM_017617.5	TET2	NM_001127208.3
ETNK1	NM_018638.5	NPM1	NM_002520.7	TP53	NM_000546.6
ETV6	NM_001987.5	NRAS	NM_002524.5	TYK2	NM_003331.5
EZH2	NM_004456.5	PDE4DIP	NM_014644.6	U2AF1	NM_006758.3
FANCA	NM_000135.4	PHF6	NM_032458.3	WT1	NM_024426.6
FAT1	NM_005245.4	PIGA	NM_002641.4	ZBTB7A	NM_015898.4
				ZRSR2	NM_005089.4

**Antibody Panel for flow cytometry**

Panel	Designation	Supplier	Fluorochrome	Clone
HSPC	CD34	Becton Dickinson	BV421	581
HSPC	CD38	Becton Dickinson	PE-Cy7	HB7
HSPC	CD133	MACS/Miltenyi	APC	AC133
HSPC	CD135	Becton Dickinson	PE	4G8
HSPC	CD45	Beckman Coulter	KO	J33
HSPC	CD45RA	Becton Dickinson	APCH7	HI100

**Marker positivity for HSPC subpopulation**

		CD34	CD38	CD45RA	CD135
<b>HSC</b>	MPP	+	-/low	-	+
	EMP	+	-/low	-	-
	LMPP	+	-/low	+	+
<b>HPC</b>	CMP	+	+	-	+
	MEP	+	+	-	-
	GMP	+	+	+	+

**Table S2.**

UPN	Already published in	Country	GATA2 mutation HGVS c. p.	GATA2 mutation HGVS	Mutation Type	Unreported P variant	ACMG/AMP classification	Familial/De novo	Sex	Age at 1st event	Type of 1st event	Age at first HEM event	HEM Spectrum	Chronic bacterial infection	HPV (Warts/Cancer)	Chronic EBV	Mycobacteria	PAP	Lymphoedema	BMT	Status at last FU	Karyotype	Recurrent mutations	Total genetic abnormalities (karyotype + molecular)
1		UK	c.599del	p.Gly200Valfs*18	FR	P	PVS1, P54, PM2, P53, P54, PM1, PM2, PM5, PP1_Moderate, PP3	F	M	16	HEM	16	1	Yes	Yes	No	No	No	No	No	A	N		0
2		UK	c.1192C>T	p.Arg398Trp	M	P	PVS1, P54, PM1, PM2, PM5, PP1_Moderate, PP3	DN	M	40	HEM	40	1	No	Yes	No	Yes	No	No	Yes	D	N	ASXL1	1
3	Cullini Mammuria, JACI, 2016	UK	c.257_258del	p.Arg86Profs*98	FR	P	PVS1, P54, PM2, PM5, PP1_Strong, PP3	DN	M	8	INF	9	1	Yes	Yes	No	No	No	No	Yes	A	45,X,-7		1
4		UK	c.1018-1G>A	p.?	S	UP	PVS1, P54, PM2, PM5, PP1_Moderate, PP2	DN	F	22	INF	26	1	Yes	Yes	No	No	No	No	Yes	D	N	BCOR, STAG2, EZH2	3
5	Tholouli, Blood, 2018	UK	c.599dup	p.Ser201*	N	P	PVS1, P54, PM2, P53, P54, PM1, PM5, PP1_Strong, PP3	F	M	30	HEM	30	1	No	No	No	No	Yes	No	Yes	A	N	GATA2, ASXL1	2
6		UK	c.1081C>T	p.Arg351Cys	M	LP	P54, PM1, PM5, P54_Supporting, PM1, PM2, PM5, PP3	DN	F	4	INF	21	1	No	Yes	Yes	No	No	Yes	No	D	N	STAG2 (2)	2
7		UK	c.1045T>G	p.Cys349Gly	M	LP	P54, PM1, PM5, P54_Supporting, PM1, PM2, PM5, PP3	DN	F	18	HEM	18	1	Yes	Yes	No	Yes	No	Yes	Yes	A	N	STAG2 (2)	2
8		UK	c.1061C>T	p.Thr354Met	M	P	P53, P54, PM1, PM2, PM5, PP1_Strong, PP3	DN	F	30	ND	31	1	Yes	Yes	No	Yes	No	No	No	A	N		0
9		UK	c.1061C>T	p.Thr354Met	M	P	P53, P54, PM1, PM2, PM5, PP1_Strong, PP3	F	M	17	HEM	17	1	No	No	No	No	No	No	No	A	47,X,-8		1
10		UK	c.1061C>T	p.Thr354Met	M	P	P53, P54, PM1, PM2, PM5, PP1_Strong, PP3	F	M	17	HEM	17	1	No	Yes	No	No	No	No	No	A	47,X,-8		1
11		UK	c.1114G>A	p.Ala372Thr	M	LP	P54, PM1, PM2, P54_Supporting, PM1, PM2, PM5, PP3	F	M	16	INF	26	1	No	Yes	No	No	No	No	Yes	A	47,X,-8		1
12		UK	c.593del	p.Ala198Glyfs*20	FR	P	PVS1, P54, PM2, PM5, PP1_Moderate, PP3	DN	F	12	INF	14	1	Yes	No	No	No	No	No	Yes	A	N	ASXL1, STAG2(2)	3
13	Sekhar, Blood Adv, 2018	UK	c.988C>T	p.Arg330*	N	P	PVS1, P54, PM2, P53, P54, PM1, PM2, PM5, PP1_Moderate, PP3	DN	F	25	INF	32	1	Yes	Yes	No	No	No	No	No	A	N	STAG2 (4)	4
14		UK	c.1192C>T	p.Arg398Trp	M	P	PVS1, P54, PM1, PM2, PM5, PP1_Moderate, PP3	F	F	0,6	HEM	0,6	0	No	No	No	No	No	No	Yes	A	N		0
15		UK	c.1124T>G	p.Leu375Arg	M	Y	PVS1, P54, PM1, PM2, PM5, PP1_Moderate, PP3	DN	M	21	HEM + IN 21	1	1	No	Yes	No	No	No	No	Yes	A	N	EZH2, STAG2, RUNX1	3
16		UK	c.351C>G	p.T117T	SN	P	P53_Very Strong, P54, PM2, PP1_S, PP3	NA	F	48	CYT	48	2	Yes	No	No	No	Yes	No	Yes	A	46,XX,der7 (11-7)(q10q10)(18/45,XX,-7[3]/46,XX[5]		5
17		FR	deletion	deletion (whole protein)	D	P	PVS1, P54, PM1, PM2, PM5, PP1_Moderate, PP3	F	F	17	INF	20	1	Yes	No	No	No	No	No	Yes	A	N	STAG2, ASXL1	2
18		FR	c.1113C>A	p.Asn371Lys	M	P	PVS1, P54, PM1, PM2, PM5, PP1_Moderate, PP3	F	M	22	CONG	NA	0	No	Yes	No	No	Yes	No	No	A	N		0
19	p48 (brother), Donadieu, Hematologic a, 2018	FR	c.1193G>A	p.Arg398Gln	M	LP	P54, PM1, PM4, PP3	F	M	NA	NA	NA	0	No	No	No	No	No	No	No	A	N		0

p48 (sister), Donatieu, 20 Haematologic a.,2018	FR	c.1193G>A	p.Arg398Gln	M		F	11	INF	NA	0	No	No	No	No	No	No	No	No	No	No	A	N	A	N	0	
21	FR	c.599dup	p.Ser201*	N	P	F	9	CYT	NA	0	No	No	No	No	No	No	No	No	No	No	A	N	A	N	0	
22	FR	c.599dup	p.Ser201*	N	P	F	24	INF	35	1	Yes	No	No	No	No	No	No	No	No	No	Yes	A	45,XX,-7	SETBP1	2	
23	FR	c.1115C>T	p.Ala372Val	M	Y	M	NA	NA	NA	0	No	No	No	No	No	No	No	No	No	No	A	N	A	N	0	
24	FR	c.1115C>T	p.Ala372Val	M	Y	F	17	INF-CYT	19	1	No	Yes	No	No	No	No	No	No	No	No	Yes	A	47,XX,+1,der(1)(qter--q31)pt11-->q25q11-->der(1)(3)/46,XX[7]	ASK11, STAG2 (2)	4	
25	FR	c.1115C>T	p.Ala372Val	M	Y	F	13	CYT	14	1	No	No	No	No	No	No	No	No	No	No	Yes	A	45,XX,-7[5]/46,XX[5]		1	
p33, Donatieu, 26 Haematologic a.,2018	FR	c.1084C>T	p.Arg362*	N	P	M	11	CONG	12	1	Yes	No	No	No	No	No	No	No	No	No	Yes	A	N	A	N	0
27	FR	c.1061C>T	p.Trp354Met	M	P	M	26	HEM	36	1	No	No	No	No	No	No	No	No	No	No	No	A	46,XY,-7[11];XY,+8[1];46,XY[8]	STAG2	3	
p1, Donatieu, 28 Haematologic a.,2018	FR	c.140_177delinsGCCCTCC CAATCACTCCGACTCCGCA GGGCAACCCCTAG	p.Val17_Gly480delinsGly LeuLeuAsnHisLeuAspSerG InGlyAsnPro	Y	LP	M	22	HEM + IN	22	1	Yes	Yes	No	No	No	No	No	No	No	No	Yes	D	47,XY,+8[17]/46,XY[4]	STAG2, ASXL1, CEBPA, ETV6	5	
29	FR	c.1073C>A	p.Trp358Asn	M	P	M	25	HEM	25	1	No	No	No	No	No	No	No	No	No	No	Yes	A	45,XY,-7[18]/46,XY[2]		1	
30	FR	c.1073C>A	p.Trp358Asn	M	P	F	NA	NA	NA	0	No	No	No	No	No	No	No	No	No	No	A	N	A	N	0	
31	FR	c.1073C>A	p.Trp358Asn	M	P	M	21	INF	54	1	No	Yes	No	No	No	No	No	No	No	No	No	A	47,XY,+8c3>/46,XY,+1,der(17)(q10)q10[4]/46,XY[13]	STAG2 (3), ASXL1, KMT2D 7	7	
p11, Donatieu, 32 Haematologic a.,2018	FR	c.915_916del	p.Trp306AlaLeu*77	FR	P	M	4	INF	14	1	Yes	No	No	No	No	No	No	No	No	No	Yes	A	45,XY,-7[7],45,XY[18],+mar1,+mar2	EZH2	2	
Donatieu, 33 Haematologic a.,2018	FR	c.1142del	p.Asn381MetIle*6	FR	P	M	6	INF	28	1	Yes	No	No	No	No	No	No	No	No	No	No	A	N	A	N	1
p46, Donatieu, 34 Haematologic a.,2018	FR	c.1117G>A	p.Ala372Thr	M	LP	F	13	HEM	13	2	Yes	No	No	No	No	No	No	No	No	No	No	D	45,XX,-7,(11;19)(q23;p13.3)[3]/47,der(+15,+20)[21]		NA	
35	FR	c.1046G>A	p.Cys395Tyr	M	Y	F	4	CYT	16	1	Yes	No	Yes	No	Yes	No	No	No	No	No	No	D	N	ECOR, RAD21, STAG2	3	
36	FR	c.1008del	p.Leu336AsnIle*51	FR	Y	M	14	CYT	16	2	No	No	No	No	No	No	No	No	No	No	Yes	A	45,XY,-7[5]	JAK2, SETBP1, GATA1	4	
p15, Donatieu, 37 Haematologic a.,2018	BEL	c.988C>T	p.Arg330*	N	P	M	7	INF	18	2	No	Yes	No	No	No	No	No	No	No	No	No	D	46,XY,+1,der(17)(q10)pt10,9qh-c(15)/46,XY,9qh-c(5)		NA	
p25, Donatieu, 38 Haematologic a.,2018	FR	c.1076T>C	p.Leu395Ser	M	Y	F	61	HEM	61	2	No	No	No	No	No	No	No	No	No	No	No	D	46,XX,del(5)	ASK11, CBL, TET2	4	
39	FR	c.1076T>C	p.Leu395Ser	M	Y	M	46	CYT	46	2	No	No	No	No	No	No	No	No	No	No	No	A	46,XY,del(5)(q15;q34)[8];46,XY[12]	ASK11 (2), RUNX1, STAG2 5	5	

p28, 40	Donatieu, Haematologic a_2018	FR	c.1082G>A	p.Arg351His	M		M	F	5	CYT	19	1	Yes	Yes	No	No	No	No	No	Yes	A	N	DNMT3A	1
41	FR	c.1082G>A	p.A48361His	M		M	M	M	22	HEM	22	2	No	No	No	No	No	No	No	Yes	D	46,XY,-7,-mat(20)	GATA2, NRAS(2), KRAS(2), PTEN(1), SETBP1, ASXL1, MYC, IKZF1(2), TYK2, MYC	14
42	FR	c.1017A>G	p.L1017A>G	S	Y	UP		M	1	INF	23	1	Yes	Yes	No	No	No	No	No	Yes	A	46,XY,-7 [13]/46,XY [7]	STAG2 (8)	9
43	FR	c.1061C>T	p.Thr354Met	M		P		M	40	HEM	40	2	No	No	No	No	No	No	No	Yes	A	N	STAG2, SETBP1	2
44	FR	c.576T>G	p.Gly327Glu	FR	Y	P		F	25	INF	25	1	Yes	Yes	No	No	No	No	No	No	A	N	ASXL1, STAG2	2
45	FR	c.400_422delinsTGAGGG	p.Pro134*	N	Y	P		M	NA	NA	NA	0	No	No	No	No	No	No	No	No	A	N		0
p25 (brother), 46	Donatieu, Haematologic a_2018	FR	c.1076T>C	p.Leu359Ser	M	Y		M	61	INF	61	2	No	No	No	No	No	No	No	Yes	D	N	ASXL1, BCOR, BCORL1, JAK2, NF1, RUNX3L, SF3B1, STAG2	8
47	FR	c.1076T>C	p.Leu359Ser	M	Y	P		F	37	INF	NA	0	No	Yes	No	No	No	No	No	No	A	NA		0
48	FR	c.1114G>A	p.Ala327Thr	M		LP		M	28	HEM + IN 28	1	1	No	No	Yes	No	No	No	No	No	A	N	STAG2 (7)	7
p18, 49	Donatieu, Haematologic a_2018	FR	c.1020_1029dup	p.Arg344Gly	FR	P		F	23	CONG	29	1	Yes	No	No	Yes	No	No	No	No	A	N	ECOR, STAG2	2
50	FR	c.1084del	p.Arg362Glu	FR	Y	P		F	0.9	CONG	9	1	Yes	No	No	No	No	No	No	Yes	A	N	STAG2	1
p42 (son), 51	Donatieu, Haematologic a_2018	FR	c.1154C>A	p.Pro385Gln	M		LP	M	NA	NA	NA	0	No	No	No	No	No	No	No	No	A	NA		0
p42 52	Donatieu, Haematologic a_2018	FR	c.1154C>A	p.Pro385Gln	M		LP	F	18	CONG	28	1	Yes	Yes	No	Yes	No	No	No	Yes	D	N		0
53	FR	c.1045dup	p.Cys349Ile	FR	Y	P		M	10	HEM	10	2	No	No	No	No	No	No	No	Yes	A	45,XY,-7,inc(6)/46,XY,inc(7)	SETBP1, DHX15	3
p3, 54	Donatieu, Haematologic a_2018	FR	c.317_318del	p.Ser106Cys	FR	P		F	29	INF	34	1	Yes	No	Yes	Yes	No	No	No	No	D	N	ASXL1, STAG2(2)	3
p6, 55	Donatieu, Haematologic a_2018	FR	c.437del	p.Gly146Val	FR	P		F	17	INF	17	1	Yes	Yes	No	No	No	No	No	No	A	N	STAG2(6)	6
56	FR	c.728_729del	p.His233Pro	FR	Y	P		M	15	CYT	16	1	No	No	No	No	No	No	No	Yes	A	45,XY,-7 [7],-46,XY [9]	STAG2	2
57	FR	c.400_422delinsTGAGGG	p.Pro134*	N	Y	P		F	6	CONG	30	1	Yes	Yes	No	No	No	No	No	Yes	A	46,XX,+1,der(17)(q10p10)[6]/47,XX,+8 [7]/46,XX[17]	DNMT3A, GATA2	4
p20, 58	Donatieu, Haematologic a_2018	FR	c.1023dup	p.Ala324Gly	FR	P		F	18	INF	40	1	Yes	Yes	No	Yes	No	No	No	Yes	D	N	STAG2	1
59	FR	c.194_195del	p.His65Arg	FR	Y	P		M	6	INF	6	1	No	No	No	No	No	No	No	Yes	A	45,XY,-7 [13]/46,XY [8]		1
p8, 60	Donatieu, Haematologic a_2018	FR	c.610C>T	p.Arg204*	N	P		F	19	INF	26	2	Yes	Yes	Yes	No	No	No	No	No	D	(11;9)(q12;q12)ring9 (q12;q34),11q [23]		1
61	FR	c.1082G>A	p.Arg351His	M		P		M	7	INF	7	2	No	No	No	No	No	No	No	Yes	A	45,-7 [20]	SETBP1	2

62	FR	c.1061C>T	p.Trp354Met	M	P	PS3, PS4, PM1, PM2, PMS, PPI_Strong, PP3	DN	F	12	HEM	12	2	No	No	No	No	No	No	No	No	Yes	A	52, XX, X, -4, +8, +8, +19 [20]	PTPN11	5	
p46 (brother), Donadieu, Haematologic a., 2018																										
63	FR	c.1187G>A	p.Arg396Gln	M	P	PS2, PS3, PS4, PM1, PM2, PMS, PPI_Moderate, PP3	F	M	12	INF	14	2	Yes	No	No	No	No	No	No	No	Yes	A	47, s1, del(7)(q32) [2] / 47, s1, der(7)t(7p22ec-7q11::7q22q31) [14] / 46, XY [11]	WT1	4	
p46 (brother), Donadieu, Haematologic a., 2018																										
64	FR	c.1187G>A	p.Arg396Gln	M	P	PS2, PS3, PS4, PM1, PM2, PMS, PPI_Moderate, PP3	F	M	15	INF	15	1	Yes	No	No	No	No	No	No	No	Yes	A	N	ASXL1	1	
p46 (brother), Donadieu, Haematologic a., 2018																										
65	FR	c.1187G>A	p.Arg396Gln	M	P	PS2, PS3, PS4, PM1, PM2, PMS, PPI_Moderate, PP3	F	M	6	HEM	6	1	No	No	No	No	Yes	No	No	No	Yes	A	45, XY, -7 [17]; XY [3]	ECOR1L, SETBP1	3	
p46 (brother), Donadieu, Haematologic a., 2018																										
66	FR	c.1187G>A	p.Arg396Gln	M	P	PS2, PS3, PS4, PM1, PM2, PMS, PPI_Moderate, PP3	F	F	23	INF + CYT	36	2	Yes	No	No	No	No	No	No	No	No	D	N	ASXL1, SETBP1, U2AF1	3	
p46 (mother), Donadieu, Haematologic a., 2018																										
67	FR	c.112C>T	p.Gln38*	N	Y	PSV1, PM2, PM4	NA	F	16	CONG	16	2	Yes	No	No	No	No	No	No	Yes	A	46, XX, -9q[3]/46, XX [12]	TET2 [3]		4	
68	FR	del exons 5 et 6	deletion	D	P	PSV1, PS4_Supporting, PM2	DN	M	4	CONG	9	1	Yes	No	No	No	No	No	No	No	Yes	A	45, XY, -7 [20]	SETBP1, ASL1		3
p45 (sister), Donadieu, Haematologic a., 2018																										
69	FR	c.1186C>T	p.Arg396Trp	M	P	PS3, PS4, PM1, PM2, PMS, PPI_Moderate, PP3	F	F	7	CYT	9	2	No	No	No	No	No	No	No	No	Yes	D	44, XX, -7, -20 [2]/46, XX [2]	KRAS, PTPN11, SETBP1		5
p45 (brother), Donadieu, Haematologic a., 2018																										
70	FR	c.1186C>T	p.Arg396Trp	M	P	PS3, PS4, PM1, PM2, PMS, PPI_Moderate, PP3	F	M	7	HEM + IN	7	2	No	No	No	No	No	No	No	No	Yes	A	45, XY, -7 [14]/46, XY [6]	SETBP1		2
71	FR	c.1061C>T	p.Trp354Met	M	P	PS3, PS4, PM1, PM2, PMS, PPI_Strong, PP3	F	M	20	HEM	20	1	No	No	No	No	No	No	No	No	Yes	A	47, XY, +8 [6]/45, XY, -7 [3]/46, XY, +1, der(17) [2], XY [8]			3
p39, Donadieu, Haematologic a., 2018																										
72	FR	c.1118G>A	p.Cys373Trp	M	LP	PS4_Supporting, PM1, PM2, PMS, PP3	F	F	0,9	INF	14	1	Yes	Yes	No	No	No	No	No	Yes	A	N	STAG2		1	
73	FR	c.1186G>A	p.Cys373Trp	M	LP	PS4_Supporting, PM1, PM2, PMS, PP3	F	M	61	CONG	NA	0	No	No	No	No	No	No	No	No	No	A	N			0
p34, Donadieu, Haematologic a., 2018																										
74	FR	c.1085G>C	p.Arg362Pro	M	LP	PS4_Moderate, PM1, PM2, PP3	F	M	17	CYT + INF	39	2	Yes	Yes	No	No	No	No	No	No	No	D	48, XY, +8, +8 [17]/46, XY [3]	NRAS, PTPN11, SF3B1, SMG1A, TP53		6
75	FR	c.1061dup	p.Trp355Aspfs*29	FR	Y	PSV1, PM2, PM4, PP4	DN	M	7	CYT	7	1	No	No	No	No	No	No	No	No	Yes	A	45, XY, -7 [2]			1
p32, Donadieu, Haematologic a., 2018																										
76	FR	c.1084C>T	p.Arg362*	N	P	PSV1, PS4, PM2	NA	M	11	INF + CON	33	1	Yes	No	No	Yes	No	No	No	Yes	A	N	46, XY, +8 [14]/46, XY [6]	STAG2		2
77	FR	c.1193G>A	p.Arg396Gln	M	LP	PS4, PM1, PM4, PP3	F	F	15	CYT	NA	0	No	No	No	No	No	No	No	No	No	A	46, XX			0
78	FR	c.367_370del	p.Lys123Argfs*94	FR	Y	PSV1, PM2, PM4, PP4	DN	M	5	INF	16	1	Yes	No	No	No	No	No	No	No	No	A	49, der(17)(q10;q10), +8, +8, +19 [11]	EZH2, GATA2		5



**Table S3.**

Germline <i>GATA2</i> mutation HGVS c.	Germline <i>GATA2</i> mutation HGVS p.	Germline <i>GATA2</i> mutations Type	Somatic <i>GATA2</i> mutation HGVS c.	Somatic <i>GATA2</i> mutation HGVS p.	Somatic <i>GATA2</i> mutations Type
c.599dup	p.Ser201*	Null (NS)	c.1168_1170 del	p.Lys390del	Inframe
c.400_422delinsT GAGGGTGGGAG	p.Pro134*	Null (NS)	c.995T>G	p.Leu332Arg	Missense
c.367_370del	p.Lys123Argfs*94	Null (FR)	c.1026_1058 dup	p.Cys352_Gln353ins HisArgArgAlaGlyThrCysCysAlaAsnCys	Inframe
c.1082G>A	p.Arg361His	Missense	c.925G>T	p.Asp309Tyr	Missense

Table S5.

		Spectrum 0	Spectrum 1	Spectrum 2
Hb (g/dL)	n	11	47	19
	Median	13,2	11,2	9,1
	Mean	13,58	11,11	9,274
	SEM	0,4065	0,3682	0,51
	SD	1,348	2,524	2,223
Platelets (G/L)	n	11	47	19
	Median	235	146	82
	Mean	246,9	145,5	91,11
	SEM	27,14	9,743	16,46
	SD	90,01	66,8	71,76
Granulocytes (G/L)	n	11	47	18
	Median	2,9	1,4	1,11
	Mean	3,113	2,034	2,668
	SEM	0,4895	0,2991	1,36
	SD	1,623	2,051	5,771
Monocytes (G/L)	n	11	44	18
	Median	0,4	0,07	0,29
	Mean	0,4327	0,156	0,6854
	SEM	0,05864	0,04023	0,1924
	SD	0,1945	0,2668	0,8162
Lymphocytes (G/L)	n	9	41	15
	Median	1,4	1,2	1,8
	Mean	1,907	1,417	2,331
	SEM	0,4425	0,1735	0,4735
	SD	1,327	1,111	1,834



Figure Supp 2. Comparison of somatic molecular and cytogenetic profile between GATA2 deficiency patients and AML patients

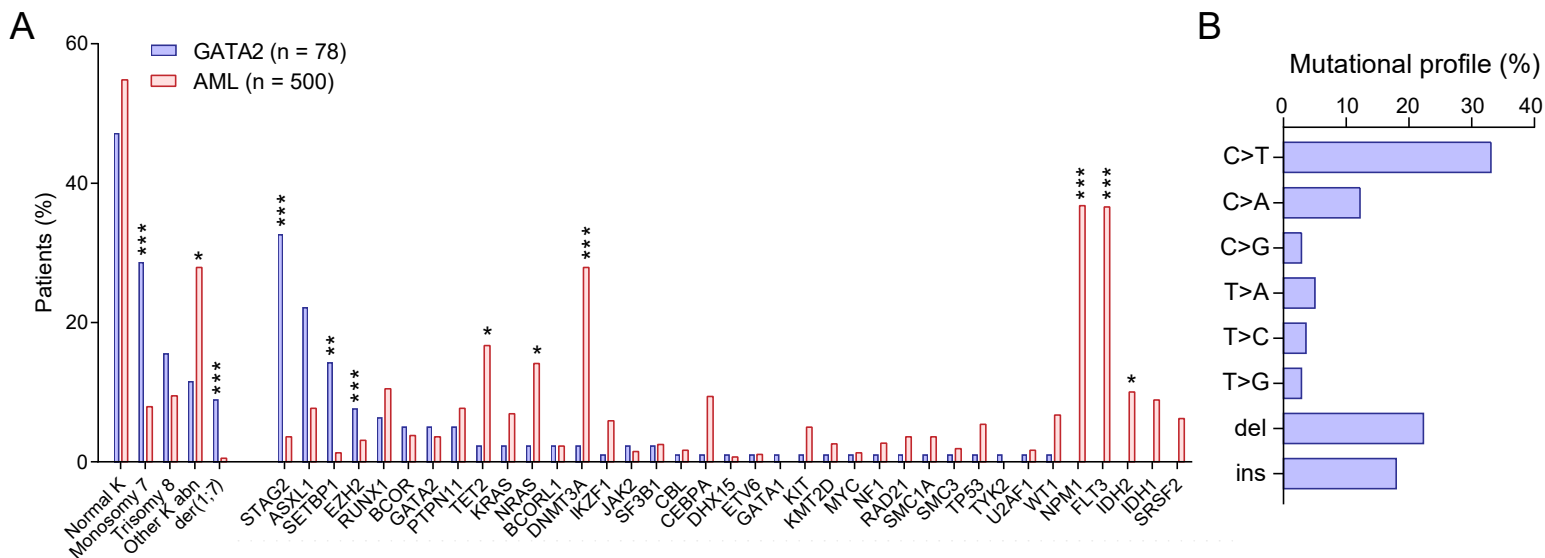


Figure Supp 3. Gating strategy to evaluate the repartition of HSPC compartment

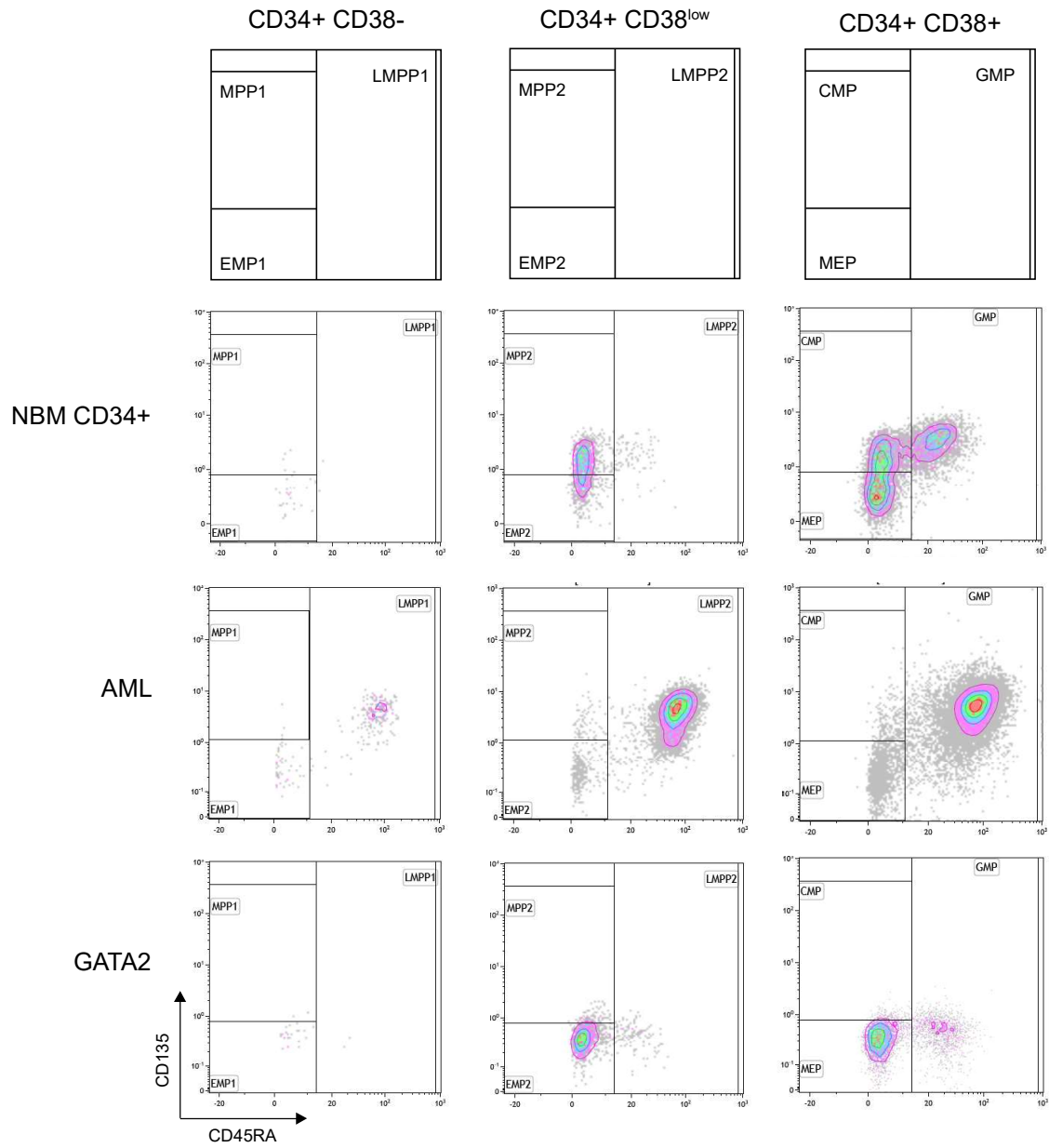
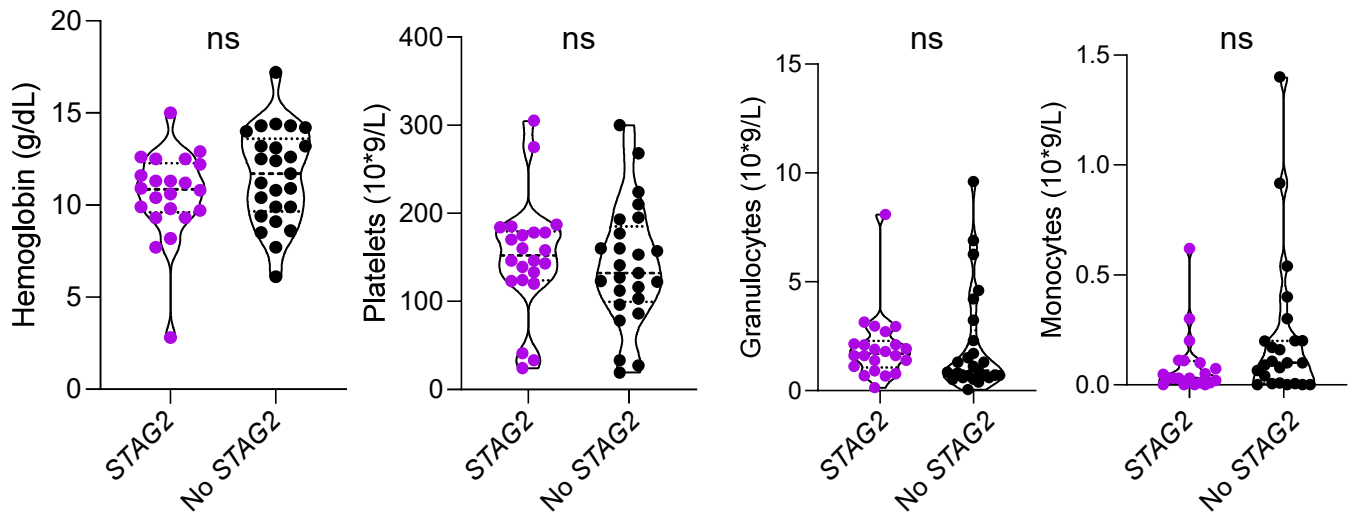
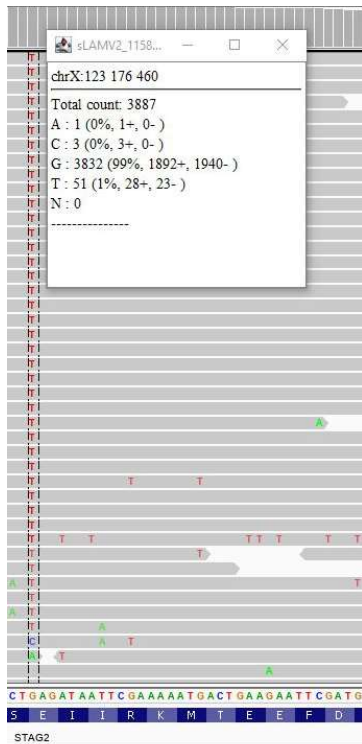


Figure Supp 4. Blood parameters associated with *STAG2* mutations in spectrum 1

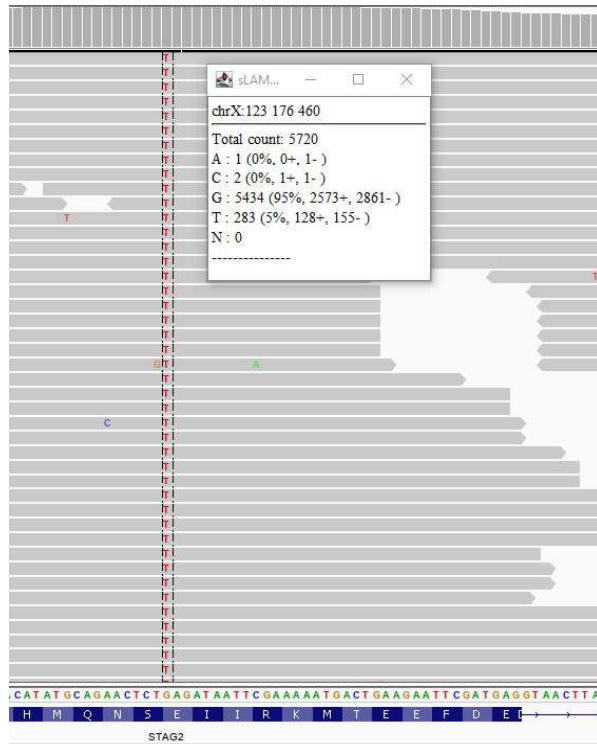


# Figure Supp 5. Examples of STAG2 mutations visualized on IGV

#51

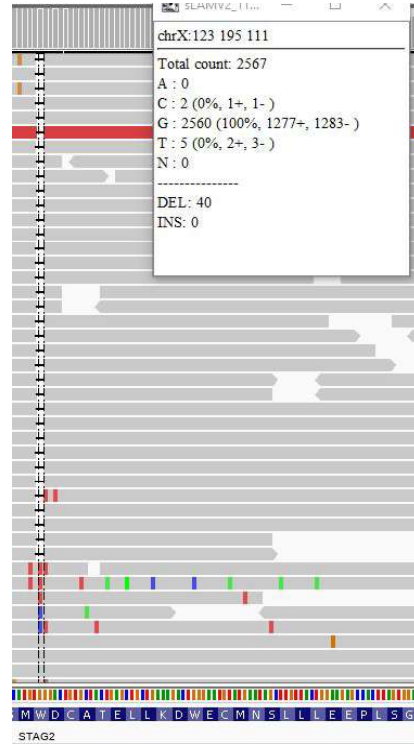


18 months

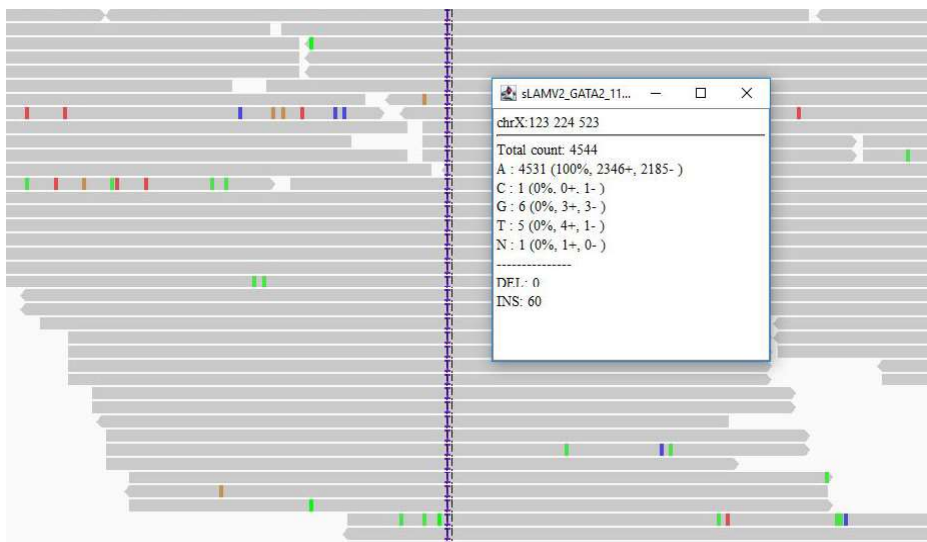


24 months

#31



#56



#48

