

SUPPLEMENTAL MATERIAL

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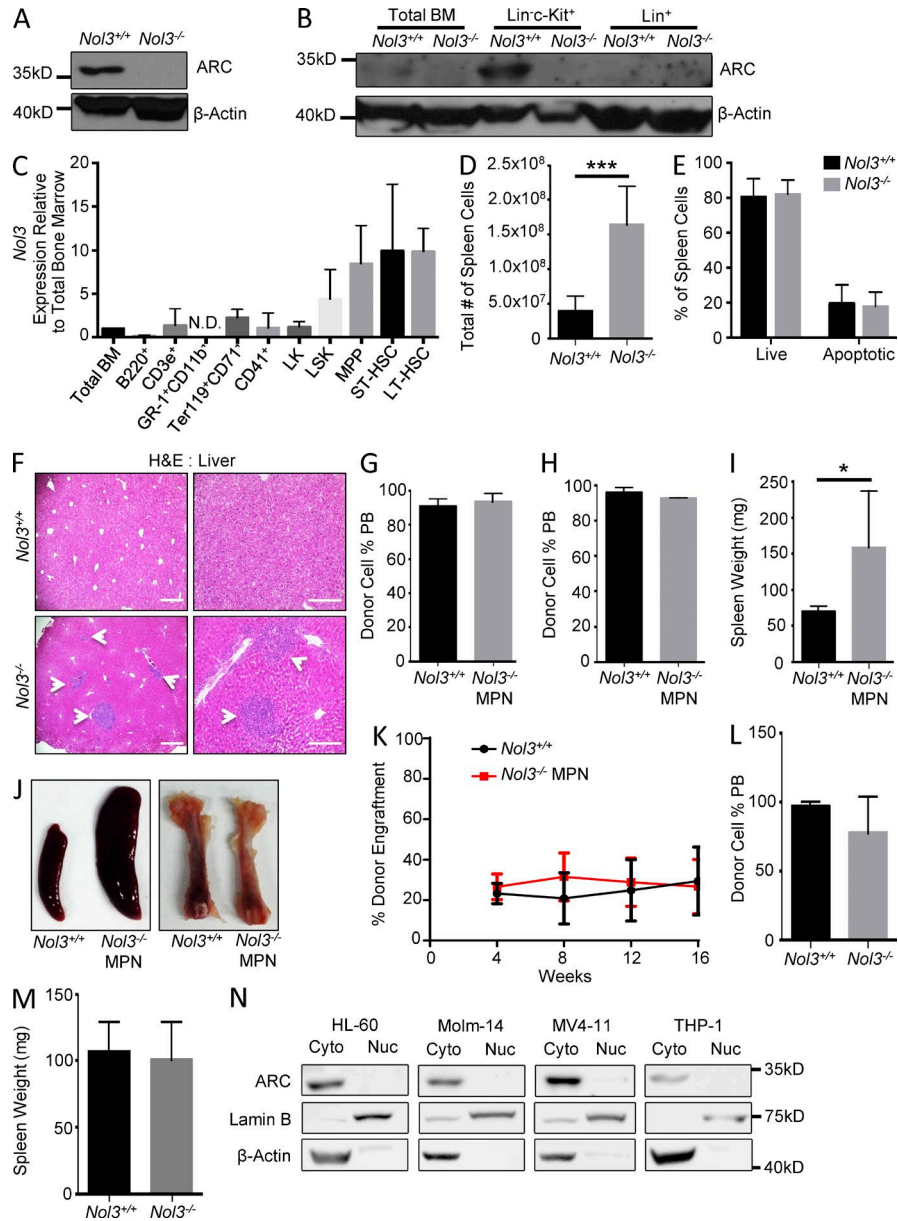


Figure S1. **ARC expression in different hematopoietic cell types, additional analyses of hematopoietic organs pre- and post-transplantation, and subcellular localization of ARC protein.** (A) Representative Western blot of ARC protein expression in *Nol3^{+/+}* and *Nol3^{-/-}* mouse heart tissue ($n = 3$). (B) Representative Western blot of ARC protein expression in *Nol3^{+/+}* and *Nol3^{-/-}* total bone marrow, sorted bone marrow lineage⁻ c-Kit⁺ cells, and sorted bone marrow lineage⁺ cells ($n = 3$). (C) Quantitative RT-PCR analysis of *Nol3* mRNA of purified mature cell populations (B220⁺, CD3e⁺, Gr-1⁺CD11b⁺, Ter119⁺CD71⁺, and CD41⁺) and stem and progenitor cell populations (LK, LSK, MPP, ST-HSC, and LT-HSC) quantified as relative expression normalized to wild-type bone marrow ($n = 3$ -4/population). N.D., not detected. (D) Total number of spleen cells in *Nol3^{+/+}* and *Nol3^{-/-}* mice (*Nol3^{+/+}*, $n = 17$; *Nol3^{-/-}*, $n = 15$). (E) Percentage of live and apoptotic cells in spleen from *Nol3^{+/+}* and *Nol3^{-/-}* mice measured by Annexin V and DAPI staining ($n = 6$). (F) Representative H&E staining of *Nol3^{+/+}* and *Nol3^{-/-}* livers. White arrowheads highlight hematopoietic cell infiltration in *Nol3^{-/-}* livers. Bars: (left) 1,000 μ m; (right) 200 μ m. (G) Percentage of peripheral blood donor cell engraftment 6-8 mo after total bone marrow cell transplantation ($n = 4$). (H) Percentage of peripheral blood donor cell engraftment 5-7 mo after total spleen cell transplantation ($n = 3$). (I) Spleen weight of competitive transplant recipient mice at >20 wk after transplantation *Nol3^{+/+}* ($n = 6$) and *Nol3^{-/-}* MPN mice ($n = 5$). (J) Representative spleen and bone marrow images of competitive transplant recipient mice >20 wk after competitive transplantation. (K) Percentage of peripheral blood donor cell engraftment after stem cell competitive transplantation of either *Nol3^{+/+}* Thy1⁺LSK or *Nol3^{-/-}* MPN Thy1⁺LSK cells with wild-type Thy1⁺LSK competitor cells. Error bars SEM. $n = 5$. (L) Percentage of peripheral blood donor cell engraftment at 11 mo after reciprocal transplantation (*Nol3^{+/+}*, $n = 6$; *Nol3^{-/-}*, $n = 13$). (M) Spleen weight of donor cell engrafted reciprocal transplantation mice (*Nol3^{+/+}*, $n = 6$; *Nol3^{-/-}*, $n = 11$), two *Nol3^{-/-}* mice were omitted due to low donor cell engraftment. (N) Cytoplasmic and nuclear fractionation Western blot of HL-60, Molm-14, MV4-11 and THP-1 cells ($n = 3$). Bars represent mean values. Error bars represent \pm SD. *, $P < 0.05$; ***, $P < 0.001$.

Table S1. **Peripheral blood counts**

Parameter	<i>Nol3^{+/+}</i> vs <i>Nol3^{-/-}</i> -CBC ^a			Reciprocal transplant CBC ^b		
	<i>Nol3^{+/+}</i>	<i>Nol3^{-/-}</i> MPN	P-value	<i>Nol3^{+/+}</i>	<i>Nol3^{-/-}</i>	P-value
WBC (K/ μ l)	10.60 \pm 3.42	10.30 \pm 6.54	0.8533	10.82 \pm 4.94	10.35 \pm 5.22	0.698
NE (K/ μ l)	2.44 \pm 1.05	2.88 \pm 2.61	0.485	2.11 \pm 0.76	1.89 \pm 0.46	0.348
LY (K/ μ l)	7.11 \pm 2.42	5.79 \pm 3.45	0.1559	7.07 \pm 3.96	7.16 \pm 4.63	0.88
MO (K/ μ l)	0.72 \pm 0.29	1.06 \pm 0.62	0.0306	1.05 \pm 0.40	0.90 \pm 0.26	0.265
EO (K/ μ l)	0.24 \pm 0.13	0.39 \pm 0.51	0.2114	0.45 \pm 0.18	0.28 \pm 0.17	0.059
BA (K/ μ l)	0.08 \pm 0.05	0.18 \pm 0.39	0.2992	0.15 \pm 0.06	0.12 \pm 0.13	0.572
NE (%)	22.65 \pm 4.91	28.54 \pm 11.12	0.0332	20.66 \pm 5.53	19.85 \pm 4.38	0.989
LY (%)	66.84 \pm 6.25	55.83 \pm 11.35	0.0003	63.02 \pm 10.74	66.84 \pm 6.19	0.468
MO (%)	6.86 \pm 1.85	10.79 \pm 3.54	0.0001	10.59 \pm 4.76	9.49 \pm 2.76	0.501
EO (%)	2.65 \pm 1.91	3.62 \pm 2.40	0.1469	4.30 \pm 1.43	2.76 \pm 0.97	0.019
BA (%)	0.99 \pm 0.99	1.22 \pm 1.30	0.5298	1.43 \pm 0.45	1.07 \pm 0.54	0.27
HCT (%)	37.89 \pm 6.58	30.36 \pm 5.65	0.0002	32.63 \pm 8.45	34.76 \pm 3.88	0.472
RBC (M/ μ l)	9.93 \pm 1.70	7.96 \pm 1.78	0.0005	8.18 \pm 2.07	8.48 \pm 1.43	0.779
Hb (g/dl)	11.92 \pm 2.22	9.56 \pm 1.97	0.0005	9.98 \pm 2.87	10.79 \pm 1.40	0.419
PLT (K/ μ l)	1124.32 \pm 418	686.28 \pm 279	0.0001	990.83 \pm 259.57	994.30 \pm 343.74	0.98

^aTable of peripheral blood counts from *Nol3^{+/+}* and *Nol3^{-/-}* mice at 11–18 mo of age (*Nol3^{+/+}*, n = 20; *Nol3^{-/-}*, n = 25). P < 0.05 between *Nol3^{+/+}* and *Nol3^{-/-}* mice are in bold.

^bTable of peripheral blood counts from reciprocal transplant mice 11 mo after transplantation (*Nol3^{+/+}* n = 6, *Nol3^{-/-}* n = 11), 2 *Nol3^{-/-}* mice were omitted due to low donor cell engraftment. P < 0.05 between *Nol3^{+/+}* and *Nol3^{-/-}* mice are in bold.

Table S2. **Characteristics of patients with myeloid malignancies with *NOL3* deletion or UPD (hg18)**

Age	Gender	Diagnosis (WHO2008)	Metaphase cytogenetics	LOH in chr16q22.1 (SNP-A)				
				Type of LOH	Cytoband	Size in Kb	Start	End
63	M	AML/MRC	44,XY,del(3)(p13p21),del(5)(q12q33),del(7)(q22q34),-8,del(12)(p11.1),-16,-17,-18,del(20)(q11.2),+mar1,+mar2[cp21]	Loss	16	88666241	1	88666241
44 ^a	M	sAML from MDS	No growth	Loss	16p11.1q24.3	53669.18	34996986	88666168
62 ^b	F	CMML1	46,XX,der(16)t(1;16)(q12;q11.2)[18]/46,XX[2]	Loss	16p11.1qter	53669.26	34996986	88666241
57 ^c	M	sAML from MDS	47-52,XY,add(1)(p13),-5, dic(6;11)(p21;p11.2),-7,add(8)(q24),-13,-16,-17,der(19)t(1;19)(p13;p13),+der(19)t(1;19)(p13;p13),add(22)(p11.2),+mar1,+mar2,+mar3,+mar4,+mar5,+mar6,+mar7,+1-5 mar[cp19]/46,XY[1]	Loss	16p11.2q24.3	54760.184	34054840	88815024
56 ^d	F	AML/MRC	45,XX,del(5)(q12q33),-7,+8, del(16)(q22),der(20)t(17;20)(q21;q13.3)[16]/44,XX,idel,-13,-15,+mar1[4]	Loss	16p11.2q24.3	56489.859	32325165	88815024
80	M	sAML from MDS	47,XY,+13[3]/47,XY,+i(13)(q10)[13]/46,XY[4]	UPD	16q21q22.1	3607.734	64450938	68058672
63	F	AML/MRC	46,XX,t(10;13)(q22;q14)[14]	Loss	16q21q22.1	4475.628	64854060	69329688
N/A	N/A	CMML1	N/A	UPD	16q21q24.3	25408.37	63257869	88666241
N/A	N/A	RAEB	N/A	Loss	16q21qter	29956.02	58871233	88827254
75	M	RAEB	47,XY,+8,t(14;16)(q11.2;q24)[1]/46,idel,del(1)(q12),der(7)t(1;7)(q12;q11.2), del(12)(p12),-21[15]/46,XY[4]	Loss	16q22.1	1340.906	65458349	66799255
81	M	sAML from MPN	46,XY,del(13)(q12q14)[7]/46,XY[13]	Loss	16q22.1	1497.69	65265130	66762820
44	F	CEL	N/A	UPD	16q22.1q22.3	15706.562	65528174	81234736
78	M	AML/MRC	Complex	Loss	16p11.2q24.3	55321.19	33354757	88675950
50	M	AML/MRC	del7q,del5q	Loss	16q21q22.1	7200.51	59744490	66944997
47	F	AML/MRC	Complex	Loss	16q21q24.3	29986.38	58828640	88815024
67	M	AML/MRC	Complex	Loss	16q22.1q24.3	23235.85	65440098	88675950
55	F	AMMoL	N/A	Loss	16q22.q23.1	12052	65690330	77743325

AML with myelodysplastic related changes (AML/MRC), secondary AML from MDS (sAML from MDS), chronic myelomonocytic leukemia subset one (CMML-1), refractory anemia with excess blasts (RAEB), secondary AML from MPN (sAML from MPN), chronic eosinophilic leukemia (CEL), acute myelomonocytic leukemia (AMMoL) (N/A = not available).

^aAdditional mutations in *CBL* and *TP53*.

^bAdditional mutation in *DNMT3a*.

^cAdditional mutation in *BCOR*.

^dAdditional mutation in *TP53*.