SUPPLEMENTAL INFORMATION

FIGURE LEGENDS

Figure S1. Mtr4 controls pt- and ua-RNA expression via a NEXT and TRAMP-independent mechanism.

(A) UCSC genome browser screenshot of a representative example of RNA-Seq data at *CSTF3* locus. **(B)** Western blot analysis of HeLa cell extracts after 48 hours KD of Mtr4 using a second Mtr4 siRNA, s223606. **(C)** RT-qPCR analysis of ptRNA and uaRNA after Mtr4 KD using s223606. proRBM39 was included as a positive control of RNA accumulation after Mtr4 depletion. Transcript levels were normalized to GAPDH mRNA, and normalized levels in siCtrl-treated cells were set to 1. Bars represent mean ± SD (n=3), and asterisks denotes significant difference from siCtrl ($P<0.05$) using an unpaired Student's t-test. **(D)** Western blot analysis of HeLa cell extracts after 96 hours KD of ZCCHC7. **(E)** RT-qPCR analysis of ptRNA, full-length mRNA (FL mRNA) and uaRNAs. RNA levels were normalized to GAPDH mRNA, and the normalized levels in siCtrl-treated cells were set to 1. Bars represent mean ± SD (n=3), and asterisks denote significant difference from siCtrl ($P<0.05$) using an unpaired Student's t-test. **(F)** Western blot analysis of HeLa cell extracts after 96 hours KD of the nuclear exosome catalytic subunits Dis3 and Rrp6. **(G)** RT-qPCR analysis of ptRNA and uaRNA after depletion of Dis3/Rrp6. Transcript levels were normalized to GAPDH mRNA, and the normalized levels in siCtrl-treated cells were set to 1. Bars represent mean ± SD (n=3), and asterisks denote significant difference from siCtrl ($P<0.05$) using an unpaired Student's t-test.

Figure S2. Co-IP analysis of Mtr4 complexes.

(A, B) HeLa cells were transfected with the indicated plasmids for 30 hours, and cell extracts were used for IP with anti-Flag in the presence of Benzonase and RNase A followed by western blotting with antibodies against the proteins indicated on the right. Note that the interaction of TRAMP with U5-40K and hnRNP M was observed only when nuclear extracts prepared using high salt buffer were used. **(C)** Cell extracts prepared from HEK293 cells were used for co-IP with anti-ZCCHC8 antibodies in the presence of Benzonase and RNase A followed by western blotting with antibodies against the proteins indicated on the right.

Figure S3. Effects of PABPN1 knockdown on pt- and ua-RNAabundances.

(A) Cell extracts prepared from HEK293 and HEK293 cells stably expressing 3FLAG-Mtr4 were used for IP with anti-Flag antibodies in the presence of Benzonase and RNase A followed by western blotting with the indicated antibodies. **(B)** Cell extracts prepared from HEK293 cells were used for co-IP experiment with anti-ZFC3H1 in the presence of Benzonase and RNase A followed by western blotting with antibodies against the proteins indicated on the right. **(C)** Western blot analysis of HeLa cell extracts after 72 hours KD treatment with the siRNAs indicated at the top, with antibodies against the proteins indicated on the right. **(D, E)** RT-qPCR analysis of indicated ptRNAs (D) and indicated uaRNAs and NEXT substrates proRBM39 and proBIRC4 (E) after the indicated siRNA transfections. Transcript levels were normalized to GAPDH mRNA, and the normalized levels in siCtrl-treated cells were set to 1. Bars represent mean ± SD (n=3), and asterisks denote significant difference from siCtrl ($P<0.05$) using an unpaired Student's t-test.

Figure S4. Poly(A) tail length analysis of pt- and ua-RNAs by RNA ligation coupled poly(A) test (RL-PAT) assay.

(A) Schematic illustration of the RL-PAT assay. RNAs were ligated with the anchor oligonucleotide and reverse-transcribed using the primer complementary to the anchor sequence. The resulting cDNA was subjected to semi-nested PCR, and PCR products were resolved in 2.0% agarose gels prestained with EtBr. **(B)** RL-PAT assay analysis of pt- and ua-RNAs following either control siRNA (siCtrl) or Mtr4 siRNA (siMtr4) treatment of HeLa cells for 72 hours. RNAs digested with RNase H in the presence of oligo(dT) were analyzed to mark positions of deadenylated RNAs (lanes 3 and 4).

Figure S5. Quantitation of polysome fractionation after Mtr4 knockdown.

Band strength in each fraction in Figure 6B-6D was quantitated using Image-studio software LICOR. Absolute signal values after background subtraction are plotted. Ribosome-bound and -free fractions are indicated by a red dashed line.

Figure S6. Polysome fractionation after Mtr4 knockdown.

(A) Agarose gel electrophoresis-EtBr staining analysis of extracted RNAs from sucrose gradient fractions, corresponding to Figure 6A. **(B)** UV absorption profiles at 254 nm (upper) and agarose gel electrophoresis-EtBr staining analysis (below) of sucrose gradients. HeLa cells were transfected with either control (Ctrl) or Mtr4 siRNA for 72 hours, and cytoplasmic extracts were separated using 15-45% sucrose gradients. **(C)** UV absorption profiles at 254 nm of sucrose gradients of samples from Mtr4 KD using a second siRNA, s223606. HeLa cells were transfected with either siCtrl or siMtr4 s223606 for 72 hours, and cytoplasmic

extracts were resolved using 15-45% sucrose gradients. **(D)** RT-qPCR analysis of ptRNA and uaRNA after the indicated hours of Mtr4 KD. Transcript levels were normalized to GAPDH mRNA, and the normalized levels in siCtrl-treated cells were set to 1.

Figure S7. Northern blotting analysis of pre-rRNA processing.

(A) Schematic of the human pre-rRNA showing the positions of the oligonucleotide probes. **(B)** Northern blot analysis of HeLa RNA extracts after 72 hours treatment of the indicated siRNAs. Unprocessed and mature rRNAs were detected using the indicated probes. Arrows and asterisks indicate accumulated precursors and mature rRNAs, respectively.

MATERIALS AND METHODS

Northern blotting

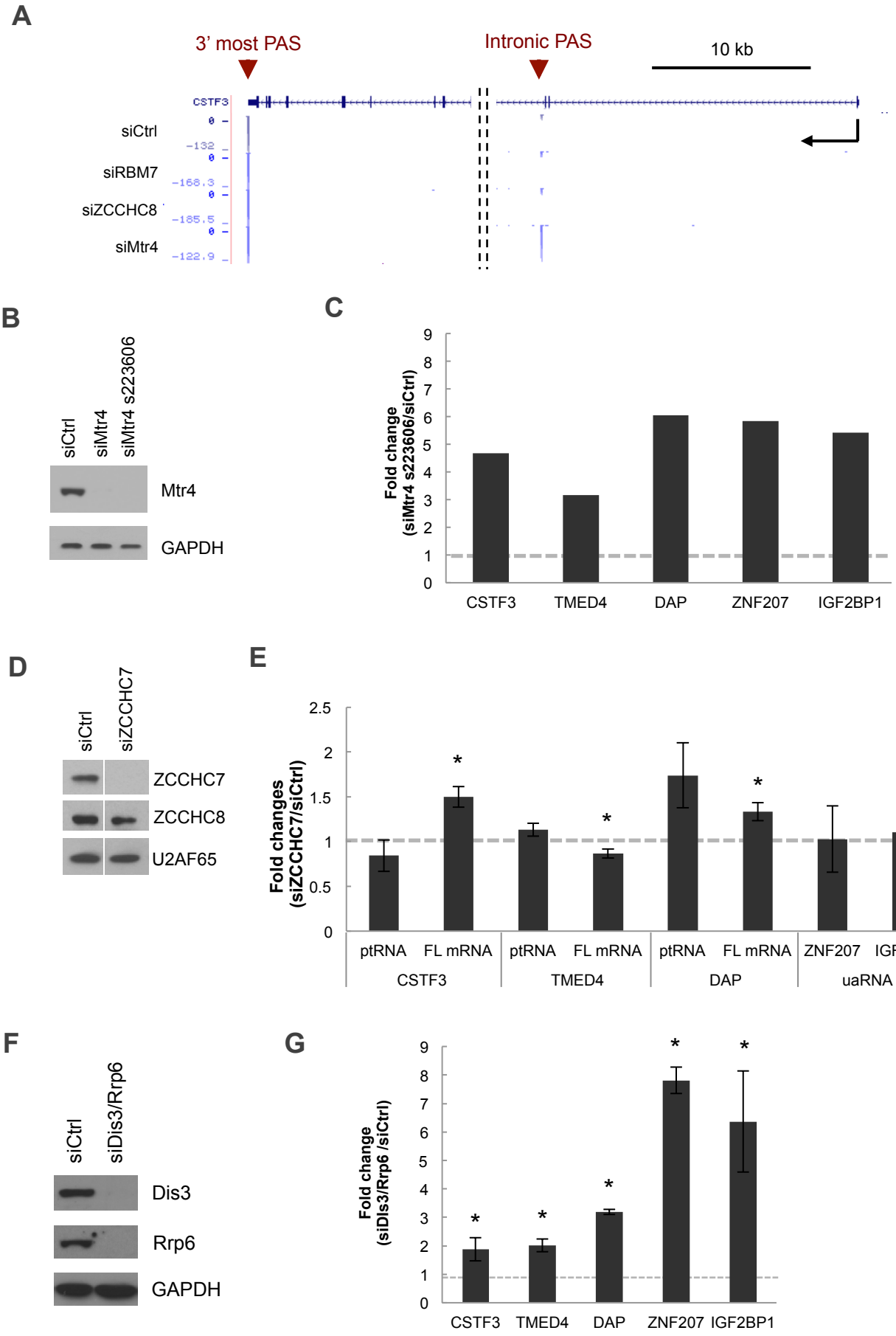
Northern blotting conditions were adapted from Wang and Pestov (2016). In brief, total RNA was extracted with TRIzol (Invitrogen) from untransfected HeLa cells or 72h after transfection with siRNAs. One (for 18S), 2 (for ITS1) or 8 (for 5.8S and ITS2) μg of total RNAs were separated on a 1% (for 18S and ITS1) or 1.8% (for 5.8S and ITS2) formaldehyde agarose gel using a Tricine-triethanolamine buffer. After O/N passive transfer to Hybond N+ membranes, blots were hybridized with ^{32}P-labeled oligo probes in hybridization solution (5 ×SSC, 5×Denhardt's solution, 0.5% SDS). After O/N incubation at 37°C, blots were washed in 2XSSC/0.1% SDS at RT for 10 min, in 2XSSC/0.1% SDS at 42°C for 10 min, in 1XSSC/0.1% SDS at 42°C for 10 min followed by 1XSSC/0.1% SDS at 42°C for 20 min and autoradiography.

RNA-ligation coupled PAT assay (RL-PAT)

DNase I-treated total RNAs were ligated with KO109 5'-Phospho-CGC GGC CGC GGA GCT CGC- NH_2-3' oligonucleotide using T4 RNA ligase 1 (New England Biolabs) in the presence of 15% PEG8000 at 14°C for 30 min, and reverse-transcribed with KO108 5'-GCG AGC TCC GCG GCC GCG-3' using Maxima Reverse Transcriptase (Thermo Fischer Scientific). Semi-nested PCR was performed using gene-specific forward primers (Table S2) and KO105 5'-GCG AGC TCC GCG GCC GCG TTT TT-3' reverse primer. PCR products were resolved in 2.0% agarose gel prestained with EtBr. To remove poly(A) tails, 10 μg of DNase I-treated RNAs were mixed with 50 pmol of oligo$(dT)_{18}$ in RNase H buffer (50 mM Tris-HCl (pH 7.4), 100 mM NaCl, 10 mM $MgCl_2$) and incubated at 85°C for 5 min, 42 °C for 10 min, and then incubated in the presence of 2U Hybridase-Thermostable RNase H (Epicentre) at 42°C for 30 min. RNase H-treated RNAs were isolated using TRIzol.

SUPPLEMENTAL REFFERENCE

Wang M, Pestov DG 2016. Quantitative northern blot analysis of mammalian rRNA processing. *Methods Mol Biol* **1455**:147-157.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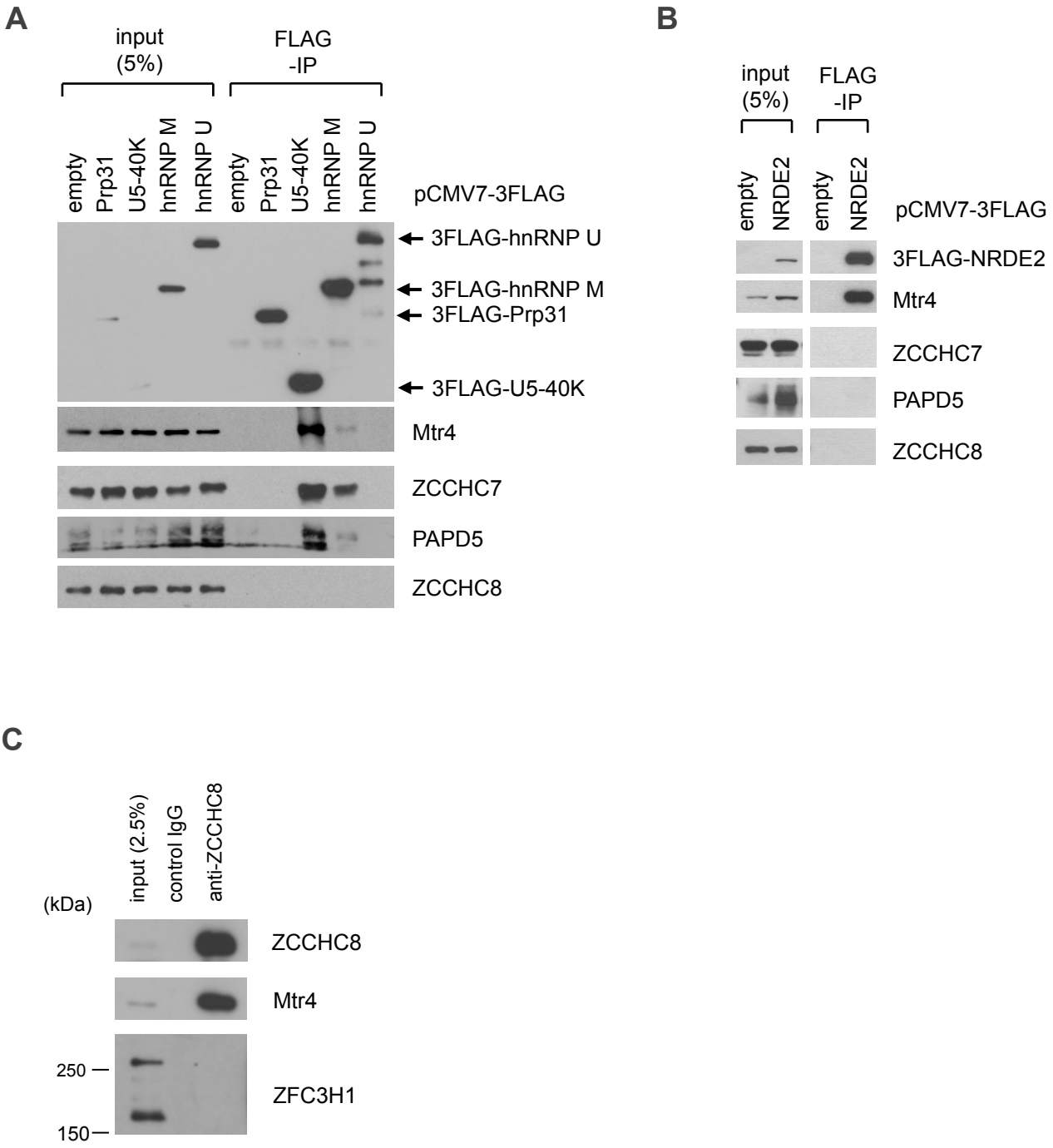
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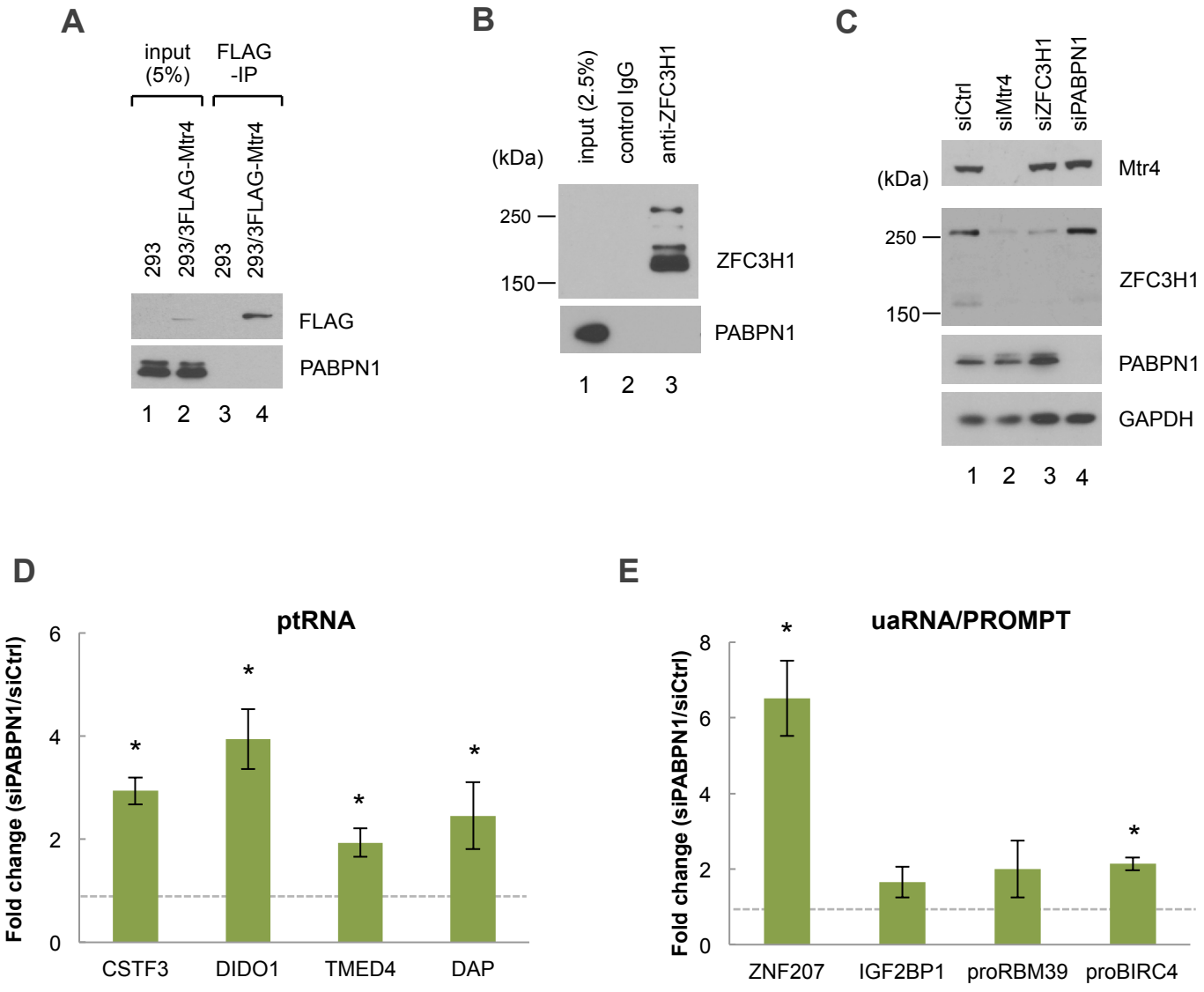
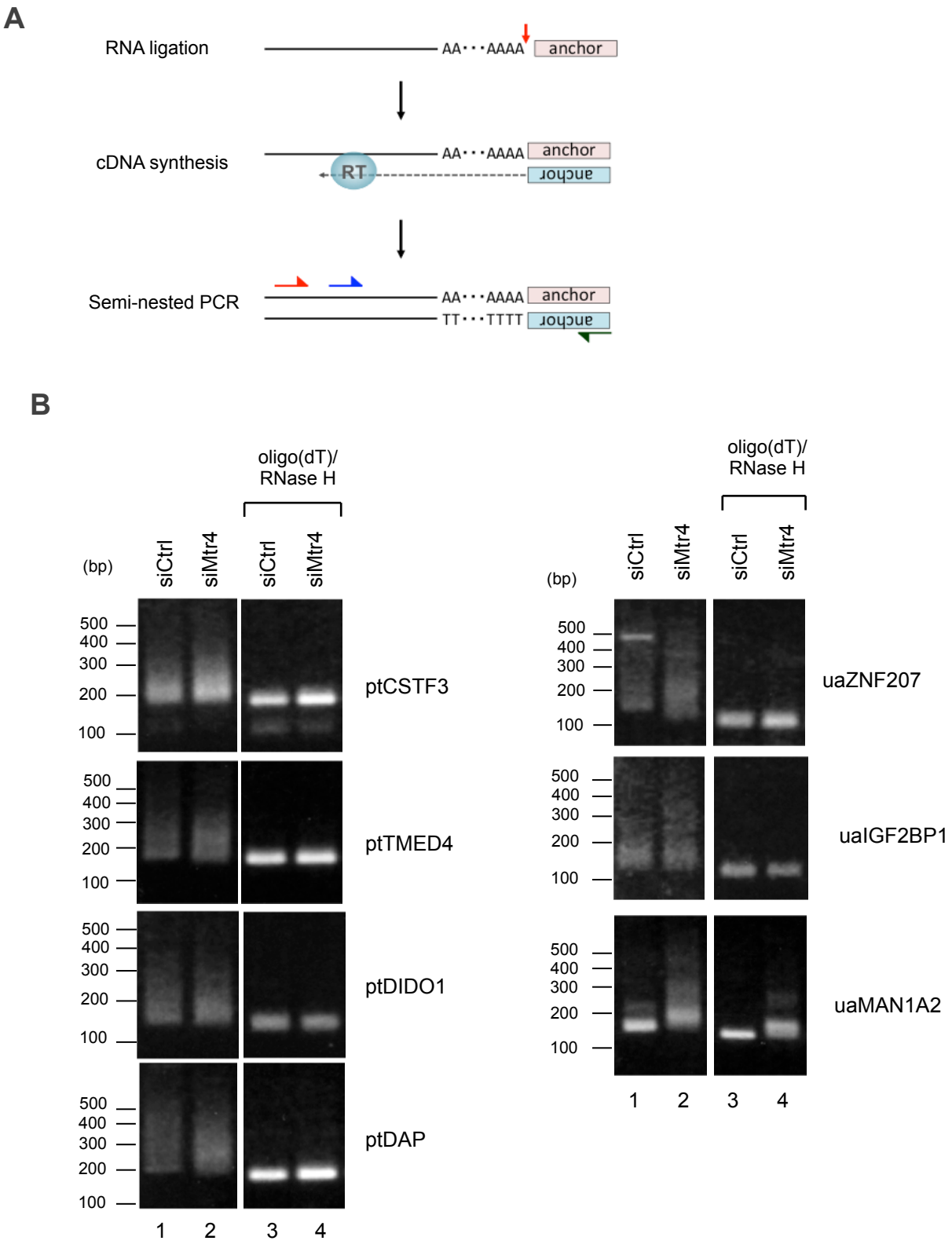
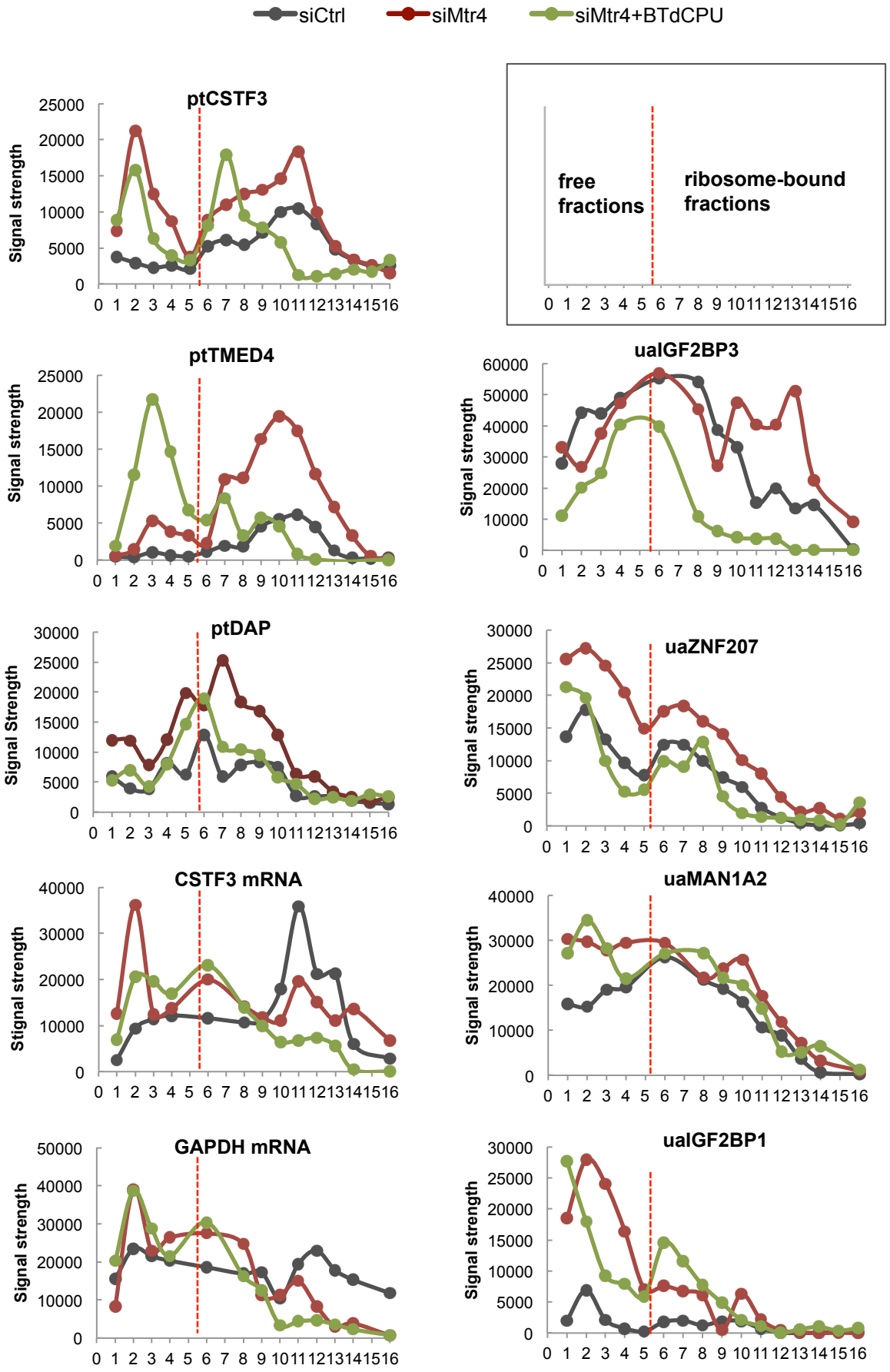
Supplementary Figure 3_K. Ogami



Supplementary Figure 4_K. Ogami



Supplementary Figure 5_K. Ogami



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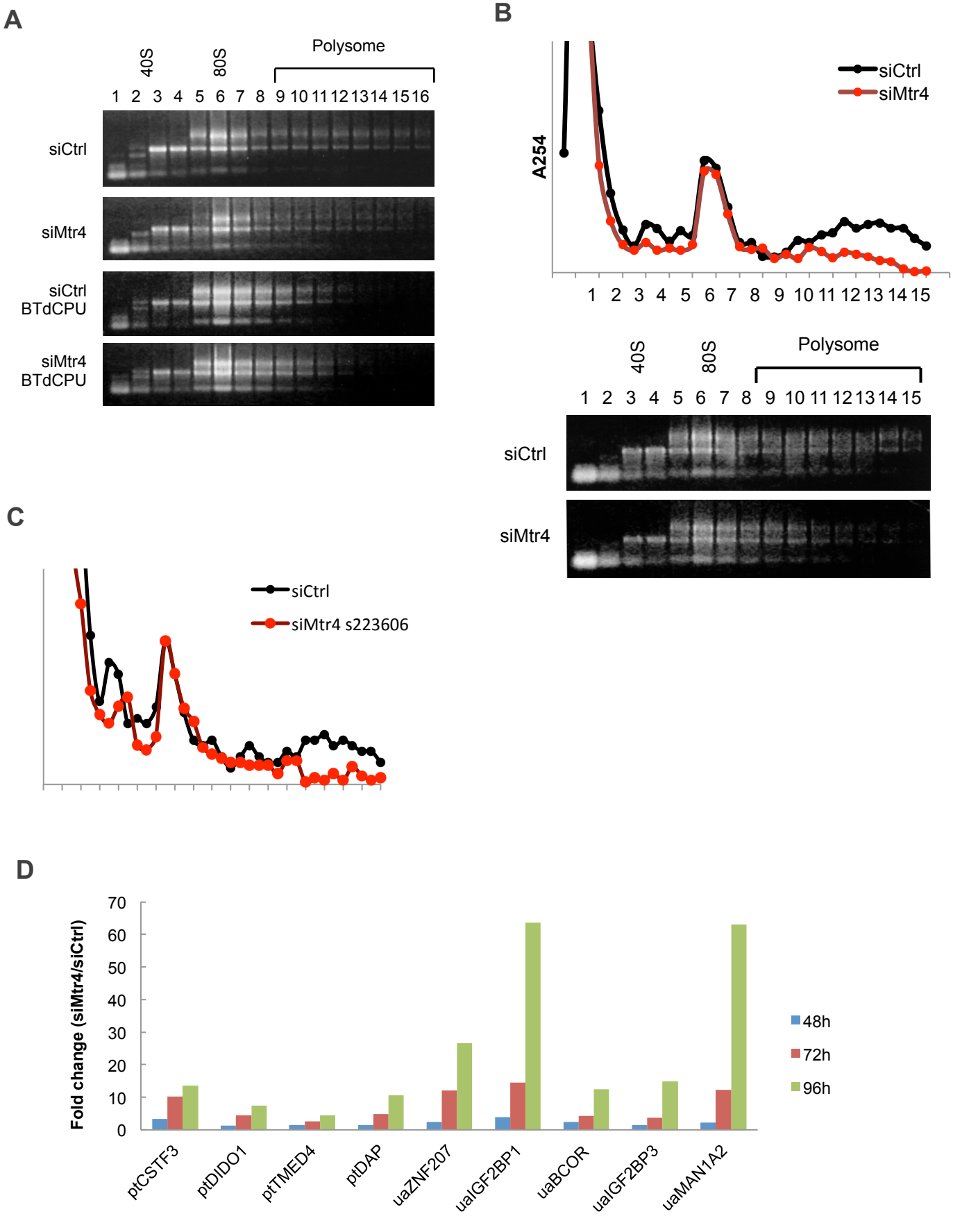

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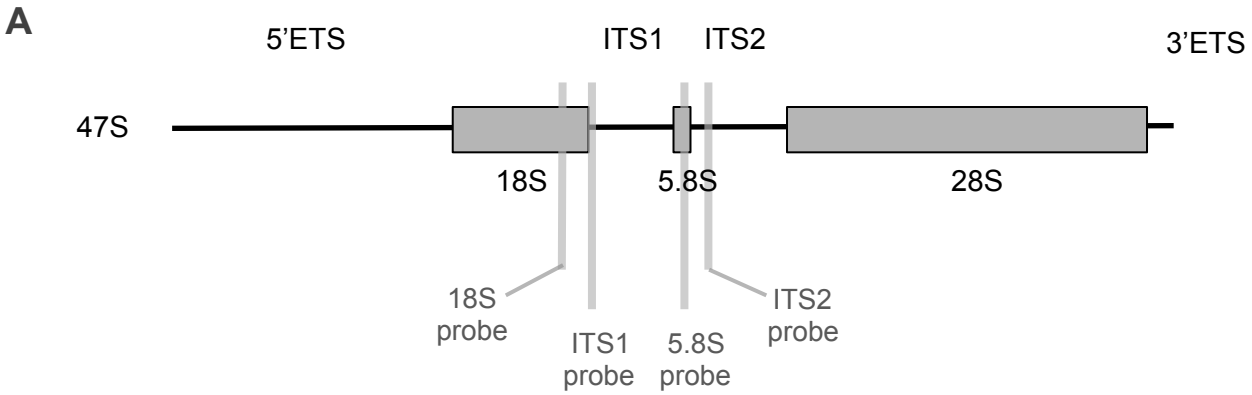

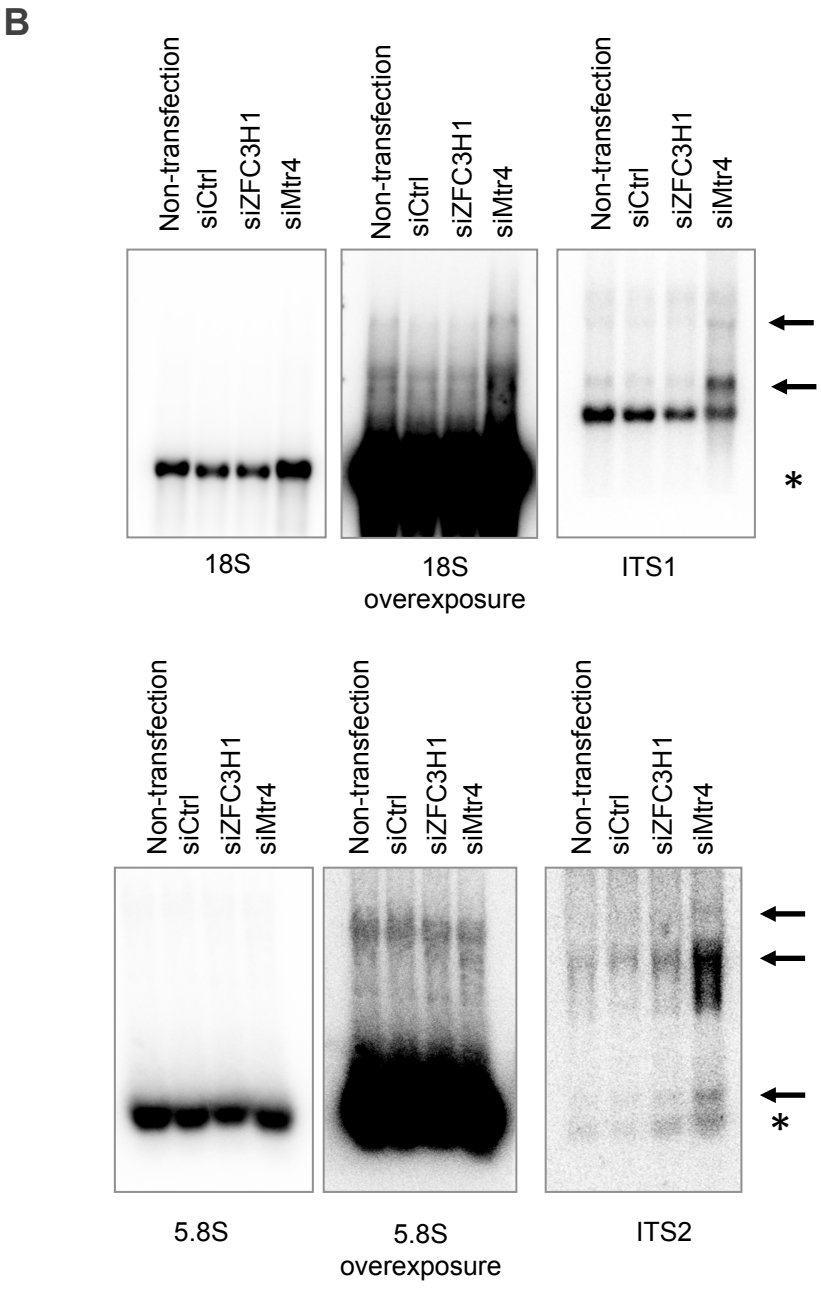

Table S1. Proteins identified in gel filtration-coupled co-IP and MS analysis

Accession	Description	A		B		C	
		293	Mtr4	293	Mtr4	293	Mtr4
P42285	SKIV2L2	0(0%)	161(29.9%)	0(0%)	282(59.1%)	0(0%)	117(38.5%)
Q6NZY4	ZCCHC8	0(0%)	23(19.8%)	0(0%)	120(51.8%)	0(0%)	0(0%)
O60293	ZFC3H1	0(0%)	10(4.1%)	0(0%)	60(18.2%)	0(0%)	0(0%)
P21333	FLNA	0(0%)	4(1.6%)	0(0%)	60(17.7%)	0(0%)	0(0%)
Q14152	EIF3A	0(0%)	0(0%)	0(0%)	45(17.6%)	0(0%)	0(0%)
Q9P2R3	ANKFY1	0(0%)	0(0%)	0(0%)	44(16.6%)	0(0%)	0(0%)
Q9Y580	RBM7	0(0%)	8(16.2%)	0(0%)	34(51.8%)	0(0%)	0(0%)
P78371	CCT2	0(0%)	0(0%)	0(0%)	42(40.2%)	0(0%)	0(0%)
P55884	EIF3B	0(0%)	0(0%)	0(0%)	41(29.6%)	0(0%)	0(0%)
Q9H7Z3	NRDE2	0(0%)	0(0%)	0(0%)	16(17.2%)	0(0%)	12(5.3%)
Q01780	EXOSC10	0(0%)	6(8.1%)	0(0%)	22(18.3%)	0(0%)	0(0%)
P55072	VCP	0(0%)	0(0%)	0(0%)	26(24.8%)	0(0%)	0(0%)
P49368	CCT3	0(0%)	0(0%)	0(0%)	24(29.2%)	0(0%)	2(3.3%)
P68363	TUBA1B	0(0%)	4(11.8%)	0(0%)	22(19.3%)	0(0%)	0(0%)
Q71U36	TUBA1A	0(0%)	4(11.8%)	0(0%)	21(16.2%)	0(0%)	0(0%)
Q9BQE3	TUBA1C	0(0%)	4(11.8%)	0(0%)	21(14%)	0(0%)	0(0%)
P17987	TCP1	0(0%)	0(0%)	0(0%)	24(18.9%)	0(0%)	0(0%)
Q6PEY2	TUBA3E	0(0%)	2(8.4%)	0(0%)	21(16.2%)	0(0%)	0(0%)
Q13748	TUBA3C	0(0%)	2(8.4%)	0(0%)	21(16.2%)	0(0%)	0(0%)
Q13347	EIF3I	0(0%)	0(0%)	0(0%)	23(46.8%)	0(0%)	0(0%)
P50991	CCT4	0(0%)	0(0%)	0(0%)	22(26.3%)	0(0%)	0(0%)
P68366	TUBA4A	0(0%)	0(0%)	0(0%)	22(19.4%)	0(0%)	0(0%)
Q99832	CCT7	0(0%)	0(0%)	0(0%)	21(27.4%)	0(0%)	0(0%)
B5ME19	EIF3CL	0(0%)	0(0%)	0(0%)	20(17.3%)	0(0%)	0(0%)
Q99613	EIF3C	0(0%)	0(0%)	0(0%)	20(17.3%)	0(0%)	0(0%)
Q00839	HNRNPU	0(0%)	8(8.5%)	0(0%)	11(12.4%)	0(0%)	0(0%)
Q07020	RPL18	0(0%)	16(26.6%)	0(0%)	3(11.7%)	0(0%)	0(0%)
Q02878	RPL6	0(0%)	12(14.2%)	0(0%)	7(16.7%)	0(0%)	0(0%)
P62913	RPL11	0(0%)	14(17.4%)	0(0%)	5(16.9%)	0(0%)	0(0%)
Q13200	PSMD2	0(0%)	0(0%)	0(0%)	19(16.5%)	0(0%)	0(0%)
P05387	RPLP2	0(0%)	14(691.6%)	0(0%)	3(46.1%)	0(0%)	0(0%)

P62266	RPS23	0(0%)	14(23.1%)	0(0%)	3(13.3%)	0(0%)	0(0%)
P62241	RPS8	0(0%)	11(31.7%)	0(0%)	6(13%)	0(0%)	0(0%)
Q5RKV6	EXOSC6	0(0%)	4(18%)	0(0%)	7(12.9%)	0(0%)	6(10.3%)
Q5VTE0	EEF1A1P5	0(0%)	4(5%)	0(0%)	13(16.5%)	0(0%)	0(0%)
P68104	EEF1A1	0(0%)	4(5%)	0(0%)	13(16.5%)	0(0%)	0(0%)
Q9BXP5	SRRT	0(0%)	0(0%)	0(0%)	16(8.2%)	0(0%)	0(0%)
P62424	RPL7A	0(0%)	12(23.7%)	0(0%)	4(7.1%)	0(0%)	0(0%)
Q13162	PRDX4	0(0%)	0(0%)	0(0%)	11(38.4%)	0(0%)	5(7.7%)
P60228	EIF3E	0(0%)	0(0%)	0(0%)	15(21.1%)	0(0%)	0(0%)
P11940	PABPC1	0(0%)	0(0%)	0(0%)	15(14.8%)	0(0%)	0(0%)
Q13310	PABPC4	0(0%)	0(0%)	0(0%)	15(14.1%)	0(0%)	0(0%)
O75821	EIF3G	0(0%)	0(0%)	0(0%)	15(37.2%)	0(0%)	0(0%)
O00231	PSMD11	0(0%)	0(0%)	0(0%)	14(19.4%)	0(0%)	0(0%)
Q13868	EXOSC2	0(0%)	7(14.3%)	0(0%)	7(27%)	0(0%)	0(0%)
P40227	CCT6A	0(0%)	0(0%)	0(0%)	14(18.5%)	0(0%)	0(0%)
P06576	ATP5B	0(0%)	0(0%)	0(0%)	14(14.2%)	0(0%)	0(0%)
P26641	EEF1G	0(0%)	0(0%)	0(0%)	14(16.9%)	0(0%)	0(0%)
P78527	PRKDC	0(0%)	0(0%)	0(0%)	13(3.5%)	0(0%)	0(0%)
O43242	PSMD3	0(0%)	0(0%)	0(0%)	12(18.9%)	0(0%)	0(0%)
P39023	RPL3	0(0%)	0(0%)	0(0%)	12(22.8%)	0(0%)	0(0%)
P61353	RPL27	0(0%)	7(20.6%)	0(0%)	5(23.5%)	0(0%)	0(0%)
P46781	RPS9	0(0%)	5(16%)	0(0%)	7(13.9%)	0(0%)	0(0%)
O15371	EIF3D	0(0%)	0(0%)	0(0%)	12(18.1%)	0(0%)	0(0%)
O75643	SNRNP200	0(0%)	0(0%)	0(0%)	12(5.9%)	0(0%)	0(0%)
P36578	RPL4	0(0%)	7(6.6%)	0(0%)	5(13.1%)	0(0%)	0(0%)
Q9Y262	EIF3L	0(0%)	0(0%)	0(0%)	12(8.7%)	0(0%)	0(0%)
Q9Y3B2	EXOSC1	0(0%)	2(15.9%)	0(0%)	9(11.8%)	0(0%)	0(0%)
Q9NQT4	EXOSC5	0(0%)	0(0%)	0(0%)	11(28.9%)	0(0%)	0(0%)
Q09161	NCBP1	0(0%)	2(2.9%)	0(0%)	9(10.9%)	0(0%)	0(0%)
P05388	RPLP0	0(0%)	11(30.6%)	0(0%)	0(0%)	0(0%)	0(0%)
P62249	RPS16	0(0%)	0(0%)	0(0%)	11(37.7%)	0(0%)	0(0%)
P62753	RPS6	0(0%)	7(20.1%)	0(0%)	4(16.9%)	0(0%)	0(0%)
P33176	KIF5B	0(0%)	0(0%)	0(0%)	10(10%)	0(0%)	0(0%)
P50914	RPL14	0(0%)	6(8.8%)	0(0%)	4(5.6%)	0(0%)	0(0%)

P38646	HSPA9	0(0%)	0(0%)	0(0%)	10(10.6%)	0(0%)	0(0%)
Q13263	TRIM28	0(0%)	0(0%)	0(0%)	10(17.4%)	0(0%)	0(0%)
Q15024	EXOSC7	0(0%)	5(20.6%)	0(0%)	5(18.6%)	0(0%)	0(0%)
P52272	HNRNPM	0(0%)	4(4%)	0(0%)	5(5.2%)	0(0%)	0(0%)
P60866	RPS20	0(0%)	2(19.3%)	0(0%)	7(22.7%)	0(0%)	0(0%)
P10809	HSPD1	0(0%)	0(0%)	0(0%)	9(14%)	0(0%)	0(0%)
Q99547	MPHOSPH6	0(0%)	0(0%)	0(0%)	6(30.6%)	0(0%)	3(13.8%)
Q8NHW5	RPLP0P6	0(0%)	9(18.3%)	0(0%)	0(0%)	0(0%)	0(0%)
P31943	HNRNPH1	0(0%)	4(6%)	0(0%)	5(15.6%)	0(0%)	0(0%)
Q9NQT5	EXOSC3	0(0%)	0(0%)	0(0%)	6(28.7%)	0(0%)	2(7.3%)
P07910	HNRNPC	0(0%)	8(19.9%)	0(0%)	0(0%)	0(0%)	0(0%)
P11021	HSPA5	0(0%)	0(0%)	0(0%)	8(14.1%)	0(0%)	0(0%)
P23246	SFPQ	0(0%)	0(0%)	0(0%)	8(7.8%)	0(0%)	0(0%)
P15880	RPS2	0(0%)	3(7.5%)	0(0%)	5(12.6%)	0(0%)	0(0%)
P29692	EEF1D	0(0%)	0(0%)	0(0%)	8(23.5%)	0(0%)	0(0%)
O15397	IPO8	0(0%)	0(0%)	0(0%)	8(9.8%)	0(0%)	0(0%)
Q99460	PSMD1	0(0%)	0(0%)	0(0%)	8(11.9%)	0(0%)	0(0%)
Q92769	HDAC2	0(0%)	0(0%)	0(0%)	8(11.9%)	0(0%)	0(0%)
P51665	PSMD7	0(0%)	0(0%)	0(0%)	8(14.2%)	0(0%)	0(0%)
Q9Y4E8	USP15	0(0%)	0(0%)	0(0%)	0(0%)	0(0%)	7(6.8%)
Q9NPD3	EXOSC4	0(0%)	0(0%)	0(0%)	7(13.9%)	0(0%)	0(0%)
Q9H361	PABPC3	0(0%)	0(0%)	0(0%)	7(2.2%)	0(0%)	0(0%)
P62195	PSMC5	0(0%)	0(0%)	0(0%)	7(21.2%)	0(0%)	0(0%)
P62280	RPS11	0(0%)	5(21.5%)	0(0%)	2(18.4%)	0(0%)	0(0%)
Q16576	RBBP7	0(0%)	0(0%)	0(0%)	7(7.1%)	0(0%)	0(0%)
Q32P51	HNRNPA1L2	0(0%)	0(0%)	0(0%)	7(10.3%)	0(0%)	0(0%)
P06702	S100A9	0(0%)	0(0%)	0(0%)	7(34.2%)	0(0%)	0(0%)
P18124	RPL7	0(0%)	7(19.4%)	0(0%)	0(0%)	0(0%)	0(0%)
P24534	EEF1B2	0(0%)	0(0%)	0(0%)	7(34.2%)	0(0%)	0(0%)
Q08211	DHX9	0(0%)	0(0%)	0(0%)	7(4.2%)	0(0%)	0(0%)
O94776	MTA2	0(0%)	0(0%)	0(0%)	6(9.7%)	0(0%)	0(0%)
Q6P2Q9	PRPF8	0(0%)	0(0%)	0(0%)	6(3.9%)	0(0%)	0(0%)
P43686	PSMC4	0(0%)	0(0%)	0(0%)	6(22.7%)	0(0%)	0(0%)
P55795	HNRNPH2	0(0%)	4(6%)	0(0%)	2(5.1%)	0(0%)	0(0%)

P05141	SLC25A5	0(0%)	0(0%)	0(0%)	6(11.7%)	0(0%)	0(0%)
P49327	FASN	0(0%)	0(0%)	0(0%)	6(4.1%)	0(0%)	0(0%)
P07437	TUBB	0(0%)	0(0%)	0(0%)	6(28.2%)	0(0%)	0(0%)
Q09028	RBBP4	0(0%)	0(0%)	0(0%)	6(12.2%)	0(0%)	0(0%)
O00303	EIF3F	0(0%)	0(0%)	0(0%)	6(9.2%)	0(0%)	0(0%)
P27635	RPL10	0(0%)	2(11.7%)	0(0%)	4(28%)	0(0%)	0(0%)
P62191	PSMC1	0(0%)	0(0%)	0(0%)	6(11.6%)	0(0%)	0(0%)
P62333	PSMC6	0(0%)	0(0%)	0(0%)	6(20.8%)	0(0%)	0(0%)
P27708	CAD	0(0%)	0(0%)	0(0%)	6(3.9%)	0(0%)	0(0%)
P46777	RPL5	0(0%)	6(16.8%)	0(0%)	0(0%)	0(0%)	0(0%)
Q15008	PSMD6	0(0%)	0(0%)	0(0%)	6(12.9%)	0(0%)	0(0%)
P54105	CLNS1A	0(0%)	0(0%)	0(0%)	6(24.1%)	0(0%)	0(0%)
P53621	COPA	0(0%)	0(0%)	0(0%)	6(5.4%)	0(0%)	0(0%)
P08238	HSP90AB1	0(0%)	0(0%)	0(0%)	4(7.9%)	0(0%)	2(2.9%)
P08670	VIM	0(0%)	0(0%)	0(0%)	6(16.5%)	0(0%)	0(0%)
P35580	MYH10	0(0%)	0(0%)	0(0%)	5(3.4%)	0(0%)	0(0%)
Q9BYE4	SPRR2G	0(0%)	0(0%)	0(0%)	5(30.1%)	0(0%)	0(0%)
P47914	RPL29	0(0%)	5(14.5%)	0(0%)	0(0%)	0(0%)	0(0%)
O60812	HNRNPCL1	0(0%)	5(17.1%)	0(0%)	0(0%)	0(0%)	0(0%)
P43243	MATR3	0(0%)	0(0%)	0(0%)	5(5%)	0(0%)	0(0%)
P62263	RPS14	0(0%)	0(0%)	0(0%)	5(29.1%)	0(0%)	0(0%)
P25398	RPS12	0(0%)	0(0%)	0(0%)	5(40.9%)	0(0%)	0(0%)
Q13547	HDAC1	0(0%)	0(0%)	0(0%)	5(8.3%)	0(0%)	0(0%)
P62701	RPS4X	0(0%)	5(14.8%)	0(0%)	0(0%)	0(0%)	0(0%)
P35325	SPRR2B	0(0%)	0(0%)	0(0%)	5(30.6%)	0(0%)	0(0%)
P35326	SPRR2A	0(0%)	0(0%)	0(0%)	5(30.6%)	0(0%)	0(0%)
P17980	PSMC3	0(0%)	0(0%)	0(0%)	5(15.9%)	0(0%)	0(0%)
P68371	TUBB4B	0(0%)	0(0%)	0(0%)	5(24%)	0(0%)	0(0%)
P46779	RPL28	0(0%)	5(17.5%)	0(0%)	0(0%)	0(0%)	0(0%)
P40429	RPL13A	0(0%)	5(9.9%)	0(0%)	0(0%)	0(0%)	0(0%)
P12236	SLC25A6	0(0%)	0(0%)	0(0%)	5(8.4%)	0(0%)	0(0%)
P12235	SLC25A4	0(0%)	0(0%)	0(0%)	5(8.4%)	0(0%)	0(0%)
P20930	FLG	0(0%)	0(0%)	0(0%)	5(1%)	0(0%)	0(0%)
P22532	SPRR2D	0(0%)	0(0%)	0(0%)	5(30.6%)	0(0%)	0(0%)

P22531	SPRR2E	0(0%)	0(0%)	0(0%)	5(30.6%)	0(0%)	0(0%)
Q9BRS2	RIOK1	0(0%)	0(0%)	0(0%)	4(12.3%)	0(0%)	0(0%)
P31151	S100A7	0(0%)	0(0%)	0(0%)	4(35.6%)	0(0%)	0(0%)
Q14683	SMC1A	0(0%)	0(0%)	0(0%)	4(2.4%)	0(0%)	0(0%)
Q58FF7	HSP90AB3P	0(0%)	0(0%)	0(0%)	2(4.2%)	0(0%)	2(3.5%)
Q07866	KLC1	0(0%)	0(0%)	0(0%)	4(2.4%)	0(0%)	0(0%)
Q00610	CLTC	0(0%)	0(0%)	0(0%)	4(3.8%)	0(0%)	0(0%)
P35998	PSMC2	0(0%)	0(0%)	0(0%)	4(12.2%)	0(0%)	0(0%)
Q9BVA1	TUBB2B	0(0%)	0(0%)	0(0%)	4(18%)	0(0%)	0(0%)
O43852	CALU	0(0%)	0(0%)	0(0%)	0(0%)	0(0%)	4(14.3%)
P23458	JAK1	0(0%)	0(0%)	0(0%)	0(0%)	0(0%)	4(2.9%)
P04350	TUBB4A	0(0%)	0(0%)	0(0%)	4(20%)	0(0%)	0(0%)
O43143	DHX15	0(0%)	2(3.3%)	0(0%)	2(3%)	0(0%)	0(0%)
A6NHT5	HMX3	0(0%)	4(4.5%)	0(0%)	0(0%)	0(0%)	0(0%)
P05109	S100A8	0(0%)	0(0%)	0(0%)	4(20.4%)	0(0%)	0(0%)
Q8WXI9	GATAD2B	0(0%)	0(0%)	0(0%)	4(6.7%)	0(0%)	0(0%)
Q7L2H7	EIF3M	0(0%)	0(0%)	0(0%)	4(15.5%)	0(0%)	0(0%)
Q9H0B6	KLC2	0(0%)	0(0%)	0(0%)	4(2.3%)	0(0%)	0(0%)
O00487	PSMD14	0(0%)	0(0%)	0(0%)	4(10%)	0(0%)	0(0%)
P62081	RPS7	0(0%)	0(0%)	0(0%)	4(13.4%)	0(0%)	0(0%)
Q13885	TUBB2A	0(0%)	0(0%)	0(0%)	4(18%)	0(0%)	0(0%)
P25787	PSMA2	0(0%)	0(0%)	0(0%)	4(23.5%)	0(0%)	0(0%)
Q6PKG0	LARP1	0(0%)	0(0%)	0(0%)	4(2.8%)	0(0%)	0(0%)
Q15750	TAB1	0(0%)	0(0%)	0(0%)	4(9.3%)	0(0%)	0(0%)
Q06265	EXOSC9	0(0%)	4(5.5%)	0(0%)	0(0%)	0(0%)	0(0%)
Q8NC51	SERBP1	0(0%)	0(0%)	0(0%)	0(0%)	0(0%)	4(7.1%)
Q15029	EFTUD2	0(0%)	0(0%)	0(0%)	4(3.2%)	0(0%)	0(0%)
P26640	VARS	0(0%)	0(0%)	0(0%)	4(3%)	0(0%)	0(0%)
P14625	HSP90B1	0(0%)	0(0%)	0(0%)	2(3.5%)	0(0%)	2(5.1%)
Q14315	FLNC	0(0%)	0(0%)	0(0%)	3(1.2%)	0(0%)	0(0%)
Q14697	GANAB	0(0%)	0(0%)	0(0%)	3(1.8%)	0(0%)	0(0%)
Q5T750	XP32	0(0%)	0(0%)	0(0%)	3(6.4%)	0(0%)	0(0%)
P05023	ATP1A1	0(0%)	0(0%)	0(0%)	3(3%)	0(0%)	0(0%)
Q99623	PHB2	0(0%)	0(0%)	0(0%)	3(11%)	0(0%)	0(0%)

P07814	EPRS	0(0%)	0(0%)	0(0%)	3(3.2%)	0(0%)	0(0%)
Q99873	PRMT1	0(0%)	0(0%)	0(0%)	3(7.5%)	0(0%)	0(0%)
Q16531	DDB1	0(0%)	0(0%)	0(0%)	3(2.8%)	0(0%)	0(0%)
P60900	PSMA6	0(0%)	0(0%)	0(0%)	3(8.9%)	0(0%)	0(0%)
Q13435	SF3B2	0(0%)	0(0%)	0(0%)	3(4.9%)	0(0%)	0(0%)
P25705	ATP5A1	0(0%)	0(0%)	0(0%)	3(4.3%)	0(0%)	0(0%)
Q04637	EIF4G1	0(0%)	0(0%)	0(0%)	3(1.8%)	0(0%)	0(0%)
P61626	LYZ	0(0%)	0(0%)	0(0%)	3(30.4%)	0(0%)	0(0%)
Q13330	MTA1	0(0%)	0(0%)	0(0%)	3(4.5%)	0(0%)	0(0%)
P46778	RPL21	0(0%)	0(0%)	0(0%)	3(16.2%)	0(0%)	0(0%)
P61247	RPS3A	0(0%)	0(0%)	0(0%)	3(10.2%)	0(0%)	0(0%)
P61163	ACTR1A	0(0%)	0(0%)	0(0%)	3(8.8%)	0(0%)	0(0%)
Q15233	NONO	0(0%)	0(0%)	0(0%)	3(11.9%)	0(0%)	0(0%)
P51991	HNRNPA3	0(0%)	0(0%)	0(0%)	3(9.5%)	0(0%)	0(0%)
Q9NY65	TUBA8	0(0%)	0(0%)	0(0%)	3(10.5%)	0(0%)	0(0%)
P20700	LMNB1	0(0%)	0(0%)	0(0%)	3(10.1%)	0(0%)	0(0%)
Q92526	CCT6B	0(0%)	0(0%)	0(0%)	3(2.5%)	0(0%)	0(0%)
P63151	PPP2R2A	0(0%)	0(0%)	0(0%)	0(0%)	0(0%)	3(3.4%)
Q9UNM6	PSMD13	0(0%)	0(0%)	0(0%)	3(8.2%)	0(0%)	0(0%)
Q9Y265	RUVBL1	0(0%)	0(0%)	0(0%)	3(4.8%)	0(0%)	0(0%)
P35579	MYH9	0(0%)	0(0%)	0(0%)	2(1.3%)	0(0%)	0(0%)
Q14406	CSHL1	0(0%)	2(3.6%)	0(0%)	0(0%)	0(0%)	0(0%)
P28074	PSMB5	0(0%)	0(0%)	0(0%)	2(10.6%)	0(0%)	0(0%)
P28070	PSMB4	0(0%)	0(0%)	0(0%)	2(11.4%)	0(0%)	0(0%)
Q9BUA3	C11orf84	0(0%)	0(0%)	0(0%)	0(0%)	0(0%)	2(3.1%)
Q14008	CKAP5	0(0%)	0(0%)	0(0%)	2(1.8%)	0(0%)	0(0%)
Q9UBQ5	EIF3K	0(0%)	0(0%)	0(0%)	2(13.3%)	0(0%)	0(0%)
O43809	NUDT21	0(0%)	0(0%)	0(0%)	2(10.6%)	0(0%)	0(0%)
P69849	NOMO3	0(0%)	0(0%)	0(0%)	2(1.9%)	0(0%)	0(0%)
P55036	PSMD4	0(0%)	0(0%)	0(0%)	2(4.8%)	0(0%)	0(0%)
Q9H853	TUBA4B	0(0%)	0(0%)	0(0%)	2(11.6%)	0(0%)	0(0%)
P13010	XRCC5	0(0%)	0(0%)	0(0%)	2(2.9%)	0(0%)	0(0%)
P49207	RPL34	0(0%)	2(15.4%)	0(0%)	0(0%)	0(0%)	0(0%)
P07900	HSP90AA1	0(0%)	0(0%)	0(0%)	2(3.3%)	0(0%)	0(0%)

Q7Z406	MYH14	0(0%)	0(0%)	0(0%)	2(1.1%)	0(0%)	0(0%)
Q7Z6Z7	HUWE1	0(0%)	0(0%)	0(0%)	2(0.6%)	0(0%)	0(0%)
P49792	RANBP2	0(0%)	0(0%)	0(0%)	2(0.6%)	0(0%)	0(0%)
P62140	PPP1CB	0(0%)	0(0%)	0(0%)	2(9.2%)	0(0%)	0(0%)
P62244	RPS15A	0(0%)	0(0%)	0(0%)	2(12.3%)	0(0%)	0(0%)
O00571	DDX3X	0(0%)	0(0%)	0(0%)	2(4.2%)	0(0%)	0(0%)
P62314	SNRPD1	0(0%)	0(0%)	0(0%)	2(10.9%)	0(0%)	0(0%)
P60842	EIF4A1	0(0%)	0(0%)	0(0%)	2(7.6%)	0(0%)	0(0%)
P60660	MYL6	0(0%)	0(0%)	0(0%)	2(15.9%)	0(0%)	0(0%)
Q13509	TUBB3	0(0%)	0(0%)	0(0%)	2(6.4%)	0(0%)	0(0%)
P62851	RPS25	0(0%)	2(15.2%)	0(0%)	0(0%)	0(0%)	0(0%)
Q86SG5	S100A7A	0(0%)	0(0%)	0(0%)	2(23.8%)	0(0%)	0(0%)
P61313	RPL15	0(0%)	2(10.3%)	0(0%)	0(0%)	0(0%)	0(0%)
Q96L21	RPL10L	0(0%)	0(0%)	0(0%)	2(8.9%)	0(0%)	0(0%)
P01243	CSH1	0(0%)	2(3.7%)	0(0%)	0(0%)	0(0%)	0(0%)
P01241	GH1	0(0%)	2(3.7%)	0(0%)	0(0%)	0(0%)	0(0%)
P01242	GH2	0(0%)	2(3.7%)	0(0%)	0(0%)	0(0%)	0(0%)
Q13283	G3BP1	0(0%)	0(0%)	0(0%)	2(4.1%)	0(0%)	0(0%)
Q15393	SF3B3	0(0%)	2(2.2%)	0(0%)	0(0%)	0(0%)	0(0%)
Q15459	SF3A1	0(0%)	0(0%)	0(0%)	2(4.8%)	0(0%)	0(0%)
P46821	MAP1B	0(0%)	0(0%)	0(0%)	2(1%)	0(0%)	0(0%)
P61254	RPL26	0(0%)	2(11%)	0(0%)	0(0%)	0(0%)	0(0%)
P83731	RPL24	0(0%)	2(13.4%)	0(0%)	0(0%)	0(0%)	0(0%)
Q15155	NOMO1	0(0%)	0(0%)	0(0%)	2(1.9%)	0(0%)	0(0%)
O15523	DDX3Y	0(0%)	0(0%)	0(0%)	2(4.2%)	0(0%)	0(0%)
Q96DI7	SNRNP40	0(0%)	0(0%)	0(0%)	2(5.9%)	0(0%)	0(0%)
Q99417	MYCBP	0(0%)	0(0%)	0(0%)	2(19.4%)	0(0%)	0(0%)
P53618	COPB1	0(0%)	0(0%)	0(0%)	2(3.6%)	0(0%)	0(0%)
Q92616	GCN1L1	0(0%)	0(0%)	0(0%)	2(1%)	0(0%)	0(0%)
Q9UQE7	SMC3	0(0%)	0(0%)	0(0%)	2(1.6%)	0(0%)	0(0%)
Q9NYJ8	TAB2	0(0%)	0(0%)	0(0%)	2(3.5%)	0(0%)	0(0%)
P26373	RPL13	0(0%)	2(8.5%)	0(0%)	0(0%)	0(0%)	0(0%)
P18077	RPL35A	0(0%)	2(16.4%)	0(0%)	0(0%)	0(0%)	0(0%)
Q5JPE7	NOMO2	0(0%)	0(0%)	0(0%)	2(1.8%)	0(0%)	0(0%)

Q9UNX3	RPL26L1	0(0%)	2(11%)	0(0%)	0(0%)	0(0%)	0(0%)
P36542	ATP5C1	0(0%)	0(0%)	0(0%)	2(7%)	0(0%)	0(0%)
P57052	RBM11	0(0%)	0(0%)	0(0%)	2(3.9%)	0(0%)	0(0%)
Q9Y295	DRG1	0(0%)	0(0%)	0(0%)	0(0%)	0(0%)	2(4.6%)
P61978	HNRNPK	0(0%)	0(0%)	0(0%)	2(3.2%)	0(0%)	0(0%)
O75369	FLNB	0(0%)	0(0%)	0(0%)	2(0.9%)	0(0%)	0(0%)
P50990	CCT8	0(0%)	0(0%)	0(0%)	39(38%)	2(4.7%)	5(2.6%)
P39019	RPS19	2(11%)	0(0%)	0(0%)	22(34.5%)	0(0%)	0(0%)
P0CG48	UBC	2(3.6%)	4(3.6%)	0(0%)	6(3.2%)	0(0%)	0(0%)
P0CG47	UBB	2(10.9%)	4(10.9%)	0(0%)	6(9.6%)	0(0%)	0(0%)
P62979	RPS27A	2(16%)	4(16%)	0(0%)	6(14.1%)	0(0%)	0(0%)
P62987	UBA52	2(19.5%)	4(19.5%)	0(0%)	6(17.2%)	0(0%)	0(0%)
P09651	HNRNPA1	2(7.5%)	0(0%)	0(0%)	9(13.2%)	0(0%)	0(0%)
P62888	RPL30	2(14.8%)	7(32.2%)	0(0%)	2(20.9%)	0(0%)	0(0%)
Q8NHM4	PRSS3P2	2(14.6%)	2(12.1%)	0(0%)	0(0%)	0(0%)	0(0%)
P47929	LGALS7	2(18.4%)	0(0%)	0(0%)	0(0%)	0(0%)	0(0%)
Q53GS9	USP39	2(3.7%)	0(0%)	0(0%)	0(0%)	0(0%)	0(0%)
Q7Z7F7	MRPL55	0(0%)	0(0%)	0(0%)	0(0%)	2(11.7%)	0(0%)
Q86YZ3	HRNR	2(1.7%)	0(0%)	0(0%)	0(0%)	0(0%)	0(0%)
Q92620	DHX38	2(2.1%)	0(0%)	0(0%)	0(0%)	0(0%)	0(0%)
P23396	RPS3	3(14.4%)	4(17.7%)	0(0%)	15(35.8%)	0(0%)	0(0%)
P32969	RPL9	3(12%)	4(5.7%)	0(0%)	12(37.5%)	0(0%)	0(0%)
P54652	HSPA2	0(0%)	0(0%)	0(0%)	7(4.5%)	3(3.9%)	0(0%)
P35268	RPL22	3(18.8%)	4(19.5%)	0(0%)	0(0%)	0(0%)	0(0%)
P01040	CSTA	3(30.6%)	2(30.6%)	0(0%)	0(0%)	0(0%)	0(0%)
Q15208	STK38	0(0%)	0(0%)	0(0%)	0(0%)	3(11.6%)	0(0%)
P81605	DCD	4(37.3%)	2(12.7%)	0(0%)	19(531.6%)	0(0%)	2(23.6%)
P11142	HSPA8	0(0%)	4(4.2%)	0(0%)	16(13.3%)	4(5.4%)	0(0%)
P48643	CCT5	0(0%)	0(0%)	3(2.2%)	53(51.8%)	2(5.2%)	6(2.2%)
P34931	HSPA1L	2(3.9%)	7(6.1%)	0(0%)	3(5.5%)	3(4.2%)	0(0%)
P30050	RPL12	2(18.8%)	0(0%)	0(0%)	9(14.5%)	3(18.2%)	0(0%)
P02768	ALB	5(5.1%)	2(2.8%)	0(0%)	5(3.9%)	0(0%)	0(0%)
P62857	RPS28	5(33.3%)	0(0%)	0(0%)	2(23.2%)	0(0%)	0(0%)
Q16875	PFKFB3	0(0%)	0(0%)	0(0%)	0(0%)	7(7.1%)	0(0%)

P22626	HNRNPA2B1	8(16.4%)	9(25.8%)	0(0%)	31(30.9%)	0(0%)	8(9.1%)
P48741	HSPA7	0(0%)	0(0%)	0(0%)	10(3.3%)	8(6.8%)	0(0%)
Q9BYX7	POTEKP	9(6.7%)	8(6.7%)	0(0%)	0(0%)	0(0%)	0(0%)
Q6S8J3	POTEE	9(2.3%)	8(2.3%)	0(0%)	0(0%)	0(0%)	0(0%)
A5A3E0	POTEF	9(2.3%)	8(2.3%)	0(0%)	0(0%)	0(0%)	0(0%)
Q9Y657	SPIN1	0(0%)	0(0%)	0(0%)	0(0%)	9(6.5%)	4(6.5%)
P17066	HSPA6	2(4.5%)	7(4.5%)	0(0%)	10(1.9%)	9(6.4%)	0(0%)
P62736	ACTA2	11(9.5%)	8(6.6%)	0(0%)	0(0%)	0(0%)	0(0%)
P68133	ACTA1	11(9.5%)	8(6.6%)	0(0%)	0(0%)	0(0%)	0(0%)
P68032	ACTC1	11(9.5%)	8(6.6%)	0(0%)	0(0%)	0(0%)	0(0%)
P63267	ACTG2	11(9.6%)	8(6.6%)	0(0%)	0(0%)	0(0%)	0(0%)
P08107	HSPA1A	4(8.7%)	22(15.6%)	0(0%)	58(31.8%)	11(10.9%)	0(0%)
P60709	ACTB	15(17.1%)	9(12.3%)	0(0%)	4(12.8%)	0(0%)	0(0%)
P63261	ACTG1	15(17.1%)	9(12.3%)	0(0%)	4(12.8%)	0(0%)	0(0%)
O75688	PPM1B	0(0%)	0(0%)	0(0%)	0(0%)	17(26.7%)	0(0%)
Q9BQA1	WDR77	0(0%)	0(0%)	10(9.4%)	103(81.7%)	9(17.3%)	0(0%)
Q8WWY3	PRPF31	0(0%)	0(0%)	0(0%)	17(26.9%)	19(19.6%)	3(9.6%)
P69905	HBA1	21(23.9%)	17(28.2%)	0(0%)	0(0%)	0(0%)	0(0%)
P02042	HBD	25(25.2%)	0(0%)	0(0%)	0(0%)	0(0%)	0(0%)
P68871	HBB	40(591.2%)	19(10.9%)	0(0%)	0(0%)	0(0%)	0(0%)
P98175	RBM10	40(19.9%)	2(3.2%)	0(0%)	51(21.3%)	21(10.8%)	47(11.6%)
O14744	PRMT5	7(7.2%)	5(3%)	41(11%)	246(64.1%)	37(28.9%)	13(6.3%)
P23588	EIF4B	0(0%)	0(0%)	0(0%)	0(0%)	90(40.8%)	51(25.4%)

Table S2. Primers and siRNAs used in this study

1) Primers for RT-PCR

Sense (5'-3')		antisense(5'-3')	
KO-009 RBM7 S	CAGGTACGAAAGGACTATGG	KO-010 RBM7 AS	GTCTCAAAGCACTGTTCATCAC
KO-060 GAPDH S	ACGACCACTTTGTCAAGCTC	KO-061 GAPDH AS	TTCCTCTTGTGCTCTTGCTG
KO-064 CSTF3 int pA S	CTGGAAACTGTACATTGAAGCAGAG	KO-065 CSTF3 int pA AS	TCCTCCTTGTCCTAATTGGCTAT
KO-066 CSTF3 last pA S	GCCTCTGCAGAAAACTCCTG	KO-067 CSTF3 last pA AS	CCATGTGATAGAGGCACCAA
KO-068 DIDO1 int pA S	CCAAACTCTTGCCCTTTGAG	KO-069 DIDO1 int pA AS	TCCTAACTCCTGCTCCCAGA
KO-070 DIDO1 last pA S	TTGGTGTTGAAAGCCAAGTG	KO-071 DIDO1 last pA AS	CCTTCTCATCGTACTAGATGTTGG
KO-072 DAP int pA S	CGGCCCACTACACTAAAGGA	KO-073 DAP int pA AS	TGAGCATTGAGGCACAAGTC
KO-074 DAP last pA S	GCCTTTCTGGTGCTGTTCTC	KO-075 DAP last pA AS	TTTCAAGTGTGAGGCTGTGC
KO-091 TMED4 int pA S	CAGTTGCTTGATCAGGTGGA	KO-092 TMED4 int pA AS	AGCTGATCTCCCAAGCAGAA
KO-093 TMED4 last pA S	CACTTGCTGACCCTGGTTCT	KO-094 TMED4 last pA AS	GGAAAATCACTCGAGGCAAA
KO-095 CD55 int pA S	TTGCCAGAGTGCAGAGGTAA	KO-096 CD55 int pA AS	TGAAAGGTGGGTTTGCTACA
KO-097 CD55 last pA S	GGCAGTCCTGGAATCACATT	KO-098 CD55 last pA AS	TTTTCCTCGTGATCCCATTC
KO-116 ZNF207 UA S	TGGGCGCTGTCTCTATCTTT	KO-126 ZNF207 UA AS	GCATGCGAATGGAAAACAG
KO-118 IGF2BP1 UA S	ACGTGGCTGGGTAGAACAAA	KO-119 IGF2BP1 UA AS	AGAAATGGGGCTGGGACTTA
KO-120 AIFM1 UA S	CCATGCTTAAGTCCAGATGCT	KO-121 AIFM1 UA AS	CCCTCACAATGGTTCGACTT
KO-189 proRBM39 S	CATTTTTGAAGGAACGGTAG	KO-188 proRBM39 AS	GGAAATAGTGGAGAAAAGCA
KO-190 proBIRC4 S	ATCCATCATCTCACCACATT	KO-191 proBIRC4 AS	CTGGTCATACCCTGGATTTA
KO-217 proFBXO7 S	TTGGGGTGATTGTTATGCAG	KO-218 proFBXO7 AS	AGGCCTCAATGAGCTGTGAT
KO-256 CSTF3 exon2 S	GGTGAAGAAAGCGGAAAAGA	KO-065 CSTF3 int pA AS	TCCTCCTTGTCCTAATTGGCTAT
KO-257 TMED4 exon3 S	TACCAGGATGGCTCTCTTCG	KO-092 TMED4 int pA AS	AGCTGATCTCCCAAGCAGAA
KO-261 NEAT1 S	TTGGTTCTGAGCTGCGTCTA	KO-262 NEAT1 AS	GTGCTGTAAAGGGGAAGAAA
KO-265 RPPH1 S	TGTCACTCCACTCCCATGTC	KO-266 RPPH1 AS	CAGCCATTGAACTCACTTCG

2) Primers for RL-PAT assay

primary PCR		secondary PCR	
KO-064 CSTF3 int pA S	CTGGAAACTGTACATTGAAGCAGAG	KO-106 CSTF3 int PAT 2nd	GCCAATTAGGACAAGGAGGATT
KO-419 DIDO1 int PAT 1st	GCTCTTCTGGGAAGAATGTTTG	KO-420 DIDO1 int PAT 2nd	TGTCAGGTAAGCATTTCTTCAGT
KO-418 TMED4 int PAT 1st	GTTCTCACAGTTCATCCATGTT	KO-107 TMED4 int PAT 2nd	GCATGTGTCAGAATTTCTTAAGGC
KO-132 DAP int S PAT 1st	CAGGAAGCTCTGGTGTTCTTGT	KO-072 DAP int pA S	CGGCCCACTACACTAAAGGA
KO-126 ZNF207 UA AS	GCATGCGAATGGAAAACAG	KO-129 ZNF207 UA PAT 2nd	AAAGATAGAGACAGCGCCCA
KO-119 IGF2BP1 UA AS	AGAAATGGGGCTGGGACTTA	KO-130 IGF2BP1 UA PAT 2nd	TTTGTTCTACCCAGCCACGT
KO-154 MAN1A2 UA AS	TCACCGGAGTTAATGGCTTC	KO-155 MAN1A2 UA PAT 2nd	GAGGATTCAGCAACAGGGTC

3) Primers for plasmid construction

Sense (5'-3')		antisense(5'-3')	
KO-052 Mtr4 SalI S	TTTGTCGACATGGCGGACGCATTCGGAGAT	KO-053 Mtr4 XbaI AS	ATATCTAGACTACAAGTAGAGGCTGGCAGCAA
KO-295 NRDE2 3Flag SalI KpnI S	AAAAGTCGACGGTACCATGGCGCTGTTCCCAGC	KO-296 NRDE2 3Flag XbaI AS	AATTTCTAGACTAATCCTCCAGCAGCA
KO-380 hnRNPU PstI S	TTCCCTGCAGATGAGTTCCTCGCCTGTT	KO-381 hnRNPU SalI AS	TTTTGTCGACTCAATAATATCCTTGGTGATAA
KO-382 hnRNPM PstI S	TTTCCTGCAGATGGCGGCAGGGGTCGA	KO-383 hnRNPM SalI AS	TTTTGTCGACTTAAGCGTTTCTATCAATTC
KO-400 Prp31 SalI S	TTTTGTCGACATGTCTCTGGCAGATGAGC	KO-401 Prp31 XbaI AS	TTTTTCTAGATCAGGTGGACATAAGGCC
KO-402 SNRNP40 SalI S	TTTTGTCGACATGATAGAACAGCAGAAGCGT	KO-403 SNRNP40 XbaI AS	TTTTCTAGATCTTCACTGAATCTCTCCCA

4) siRNAs

Name	Sense (5'-3')	antisense(5'-3')
siMtr4	CAAUUAAGGCUCUGAGUAATT	UUACUCAGAGCCUUAAUUGTT
siRBM7	GUCAUAUGGUGGAAAAUUUTT	AAAUUUUCCACCAUAUGACTT
siZCCHC8	GAAAUACAACAGAAUAAAATT	UUUUAUUCUGUUGUAUUUCTT
siZCCHC7	CUAAUGAGCUGGUUGAUAATT	UUAUCAACCAGCUCAUUAGTT
siZFC3H1	GAAACAAGCUGAAGAAGAATT	UUCUUCUUCAGCUUGUUUCTT