

Table S1. Constructs used in this study; Related to STAR Methods.

Construct	Uniprot ID	Insert Sequence	Backbone	Promoter
mCh-Cry2	N/A	None	pHR_SFFV-mCherry-Cry2	SFFV
FUS ^{IDR}	P35637	aa 1-214	pHR_SFFV-mCherry-Cry2	SFFV
hnRNPA1 ^{IDR}	P09651	aa 186-320	pHR_SFFV-mCherry-Cry2	SFFV
SMN-Cry2	Q16637	aa 1-294	pHR_SFFV-mCherry-Cry2	SFFV
SMN ^{IDR-N}	Q16637	aa 1-91	pHR_SFFV-mCherry-Cry2	SFFV
SMN ^{Tud}	Q16637	aa 92-145	pHR_SFFV-mCherry-Cry2	SFFV
SMN ^{IDR-C}	Q16637	aa 146-294	pHR_SFFV-mCherry-Cry2	SFFV
<i>dm</i> Tudor ^{Tud}	P25823	aa 2315-2515	pHR_SFFV-mCherry-Cry2	SFFV
Aub3	O76922	3x(NPVIARGRGRGRK)	pLV-EGFP	eIF4a
Aub3(KG)	O76922	3x(NPVIAKGKGKGGK)	pLV-EGFP	eIF4a
Spf30 ^{Tud}	O75940	72-132	pHR_SFFV-mCherry-Cry2	SFFV
Tdrd1 ^{Tud} #2	O9BXT4	541-600	pHR_SFFV-mCherry-Cry2	SFFV
Tdrd1 ^{Tud} #3	O9BXT4	762-821	pHR_SFFV-mCherry-Cry2	SFFV
Tdrd1 ^{Tud} #4	O9BXT4	990-1048	pHR_SFFV-mCherry-Cry2	SFFV
Tdrd3 ^{Tud}	Q9H7E2	555-615	pHR_SFFV-mCherry-Cry2	SFFV
Tdrd4 ^{Tud} #1	Q9BXT8	726-784	pHR_SFFV-mCherry-Cry2	SFFV
Tdrd4 ^{Tud} #4	Q9BXT8	1479-1539	pHR_SFFV-mCherry-Cry2	SFFV
Tdrd6 ^{Tud} #5	O60522	1033-1088	pHR_SFFV-mCherry-Cry2	SFFV
Tdrd6 ^{Tud} #6	O60522	1352-1411	pHR_SFFV-mCherry-Cry2	SFFV
Tdrd8 ^{Tud}	Q9BXU1	78-137	pHR_SFFV-mCherry-Cry2	SFFV

Tdrd9 ^{Tud}	Q8NDG6	944-1004	pHR_SFFV-mCherry-Cry2	SFFV
Snd1 ^{Tud}	Q7KZF4	729-787	pHR_SFFV-mCherry-Cry2	SFFV
Recoded WT SMN-Myc	Q16637	1-294	pEGFP-N1	CMV
	<i>Sequence:</i>	ATGGCCATGTCTTCCGGAGGCTCTGGCGGCGGGGTCCC TGAGCAGGAAGATAGTGTACTCTTCCGAAGGGGCACA GGGCAATCAGACGATTCTGACATCTGGGATGACACTGC GCTTATCAAAGCATAACGACAAGGCCGTTGCCAGCTTTA AACATGCTCTGAAAAATGGCGATATCTGTGAGACATCC GGCAAACCGAAGACCACTCCAAAGCGGAAGCCCGCCA AGAAGAACAAGTCACAGAAGAAGAACACGGCAGCTTC ACTGCAACAGTGGAAAGTGGGTGATAAGTGTTCCGCC ATCTGGTCAGAAGATGGCTGCATCTATCCTGCTACCAT TGCGAGTATCGACTTCAAAGAGAAACCTGCGTGGTC GTTTACACAGGATACGGTAATCGTGAAGAGCAGAATC TCTCCGATCTGCTGAGTCCAATTTGTGAGGTGGCAAAC AATATAGAACAGAATGCCAGGAGAACGAGAACGAAA GCCAAGTGAGCACCGATGAGTCCGAGAACAGTAGGAG CCCGGGAAACAAATCAGACAATATCAAACCTAAGAGC GCACCCTGGAACAGCTTTTTACCCCTCCACCACCAAT GCCAGGGCCCCGCTTGGGCCCTGGGAAGCCTGGACTG AAATTCAATGGACCACCTCCACCTCCTCCGCCTCCACC TCCGCACCTTCTCTCTTGCTGGCTCCCACCTTTTCCATC GGGGCCACCTATAATACCTCCACCTCCACCTATTTGTC CCGACAGCCTAGATGACGCCGACGCTTTAGGCTCCATG CTGATTTCTGGTATATGTCTGGTTATCACACTGGATAT TACATGGGTTTCCGGCAGAATCAGAAGGAAGGGAGAT GCAGCCATAGTTTGAACGAGCAGAACTGATTTCTGAG GAAGACCTGTGA		
Recoded E134K SMN-Myc	Q16637	1-294 (E134K)	pEGFP-N1	CMV
	<i>Sequence:</i>	ATGGCCATGTCTTCCGGAGGCTCTGGCGGCGGGGTCCC TGAGCAGGAAGATAGTGTACTCTTCCGAAGGGGCACA GGGCAATCAGACGATTCTGACATCTGGGATGACACTGC GCTTATCAAAGCATAACGACAAGGCCGTTGCCAGCTTTA AACATGCTCTGAAAAATGGCGATATCTGTGAGACATCC GGCAAACCGAAGACCACTCCAAAGCGGAAGCCCGCCA AGAAGAACAAGTCACAGAAGAAGAACACGGCAGCTTC ACTGCAACAGTGGAAAGTGGGTGATAAGTGTTCCGCC ATCTGGTCAGAAGATGGCTGCATCTATCCTGCTACCAT		

TGCGAGTATCGACTTCAAAGAGAAACCTGCGTGGTC
GTTTACACAGGATACGGTAATCGTAAGGAGCAGAATC
TCTCCGATCTGCTGAGTCCAATTTGTGAGGTGGCAAAC
AATATAGAACAGAATGCCCAGGAGAACGAGAACGAAA
GCCAAGTGAGCACCGATGAGTCCGAGAACAGTAGGAG
CCCGGGAAACAAATCAGACAATATCAAACCTAAGAGC
GCACCCTGGAACAGCTTTTTACCCCCTCCACCACCAAT
GCCAGGGCCCCGCTTGGGCCCTGGGAAGCCTGGACTG
AAATTCAATGGACCACCTCCACCTCCTCCGCCTCCACC
TCCGCACCTTCTCTCTTGCTGGCTCCCACCTTTTCCATC
GGGGCCACCTATAATACCTCCACCTCCACCTATTTGTC
CCGACAGCCTAGATGACGCCGACGCTTTAGGCTCCATG
CTGATTTCTGTTATATGTCTGGTTATCACACTGGATAT
TACATGGGTTTCCGGCAGAATCAGAAGGAAGGGAGAT
GCAGCCATAGTTTGAACGAGCAGAACTGATTTCTGAG
GAAGACCTGTGA

Recoded Y109L SMN-Myc	Q16637	1-294 (Y109L)	pEGFP-N1	CMV
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Sequence: ATGGCCATGTCTTCCGGAGGCTCTGGCGGCGGGGTCCC
TGAGCAGGAAGATAGTGTACTCTTCCGAAGGGGCACA
GGCAATCAGACGATTCTGACATCTGGGATGACACTGC
GCTTATCAAAGCATAACGACAAGGCCGTTGCCAGCTTTA
AACATGCTCTGAAAAATGGCGATATCTGTGAGACATCC
GGCAAACCGAAGACCACTCCAAAGCGGAAGCCCGCCA
AGAAGAACAAGTCACAGAAGAAGAACACGGCAGCTTC
ACTGCAACAGTGGAAAGTGGGTGATAAGTGTTCGCC
ATCTGGTCAGAAGATGGCTGCATCTTACCTGCTACCAT
TGCGAGTATCGACTTCAAAGAGAAACCTGCGTGGTC
GTTTACACAGGATACGGTAATCGTGAAGAGCAGAATC
TCTCCGATCTGCTGAGTCCAATTTGTGAGGTGGCAAAC
AATATAGAACAGAATGCCCAGGAGAACGAGAACGAAA
GCCAAGTGAGCACCGATGAGTCCGAGAACAGTAGGAG
CCCGGGAAACAAATCAGACAATATCAAACCTAAGAGC
GCACCCTGGAACAGCTTTTTACCCCCTCCACCACCAAT
GCCAGGGCCCCGCTTGGGCCCTGGGAAGCCTGGACTG
AAATTCAATGGACCACCTCCACCTCCTCCGCCTCCACC
TCCGCACCTTCTCTCTTGCTGGCTCCCACCTTTTCCATC
GGGGCCACCTATAATACCTCCACCTCCACCTATTTGTC
CCGACAGCCTAGATGACGCCGACGCTTTAGGCTCCATG
CTGATTTCTGTTATATGTCTGGTTATCACACTGGATAT
TACATGGGTTTCCGGCAGAATCAGAAGGAAGGGAGAT
GCAGCCATAGTTTGAACGAGCAGAACTGATTTCTGAG
GAAGACCTGTGA

Table S2. Antibodies used in this study; Related to STAR Methods.

Name	Epitope	Source	Application & Dilution
mCherry Antibody	mCherry	Invitrogen (#PA5-34974)	WB (1:2000), IF (1:500)
Coilin (H-300)	Coilin	Santa Cruz Biotechnology (#sc-32860)	IF (1:200)
Coilin (replacement for discontinued H-300)	Coilin	Abcam (#ab210785)	IF (1:800)
SYM10	sDMA	Millipore Sigma (#07-412)	WB (1:1000), IF (1:100)
SYM11	sDMA	Millipore Sigma (#07-413)	WB (1:1000)
ASYM24	aDMA	Millipore Sigma (#07-414)	WB (1:2000)
SMN (2B1)	SMN	Abcam (#ab5831)	IF (1:200)
Anti-green fluorescent protein, rabbit IgG fraction	GFP	Invitrogen (#A11122)	WB (1:2000)
GAPDH (FL-335)	GAPDH	SantaCruz Biotechnology (#sc-25778)	WB (1:2000)
Y12	Sm	Gift from Joan Steitz	IF (1:10)
Anti-2,2,7-Trimethylguanosine Mouse mAb (K121)	TMG	Calbiochem (#NA02)	IF (1:200)
Rb pAb to SNRPC	U1 snRNP-C	Abcam (#ab82862)	IF (1:200)
CB7	U1-70K	Gift from Doug Black	IF (1:200)
Anti-rabbit IgG Horseradish Peroxidase-Linked Species-Specific Whole Antibody	Rabbit IgG	GE HealthCare (#NA934)	WB (1:10,000)
Alexa Fluor 488-conjugated AffiniPure Donkey Anti-Rabbit IgG	Rabbit IgG	Jackson ImmunoResearch (#711-545-152)	IF (1:500)
Alexa Fluor 488-conjugated AffiniPure Donkey Anti-Mouse IgG	Mouse IgG	Jackson ImmunoResearch (#715-545-150)	IF (1:500)
Anti-Mouse IgG – Atto 594	Mouse IgG	Sigma (#76085)	IF (1:500)
Anti-Rabbit IgG – Atto 594	Rabbit IgG	Sigma (#77671)	IF (1:500)
Anti-Mouse IgG – Atto 647N	Mouse IgG	Sigma (#50185)	IF (1:500)
Anti-Rabbit IgG – Atto 647N	Rabbit IgG	Sigma (40839)	IF (1:500)

Abbreviations- WB: Western Blot, IF: Immunofluorescence