

Supplementary Figures and Tables

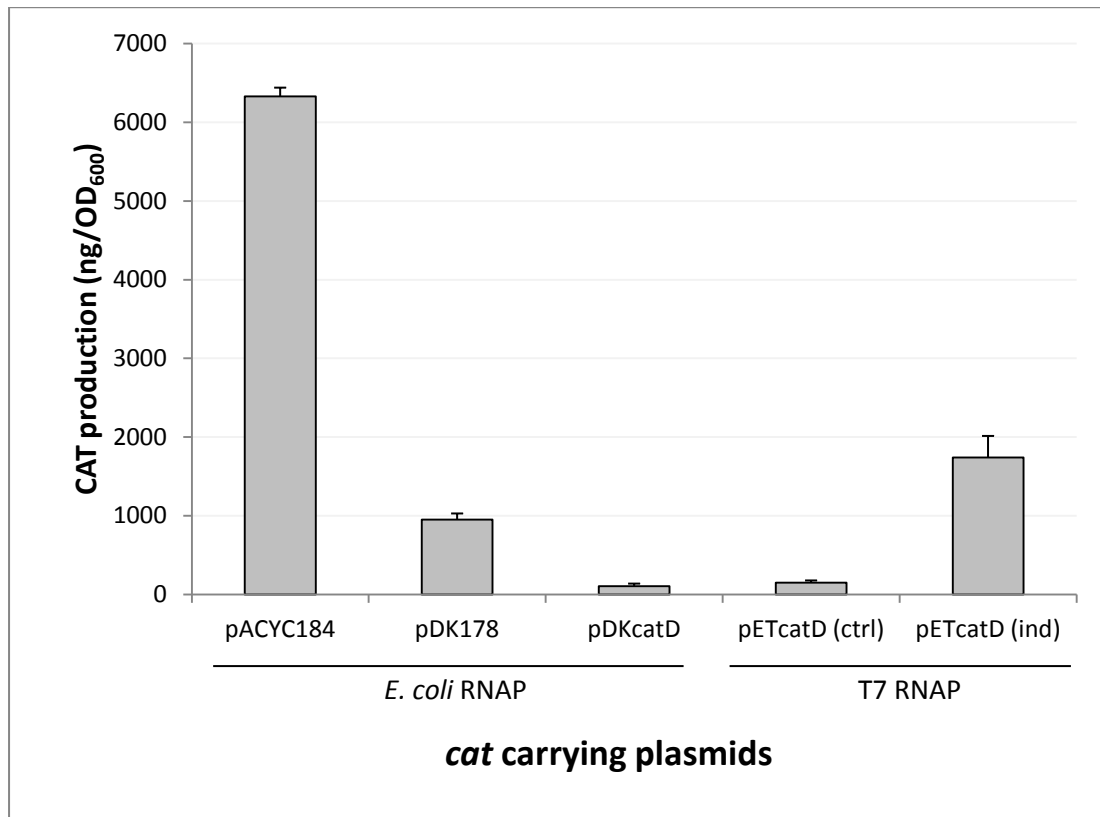
RNA editing by T7 RNA polymerase bypasses InDel mutations with high efficiency causing unexpected phenotypic changes

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Supplementary Figure S1

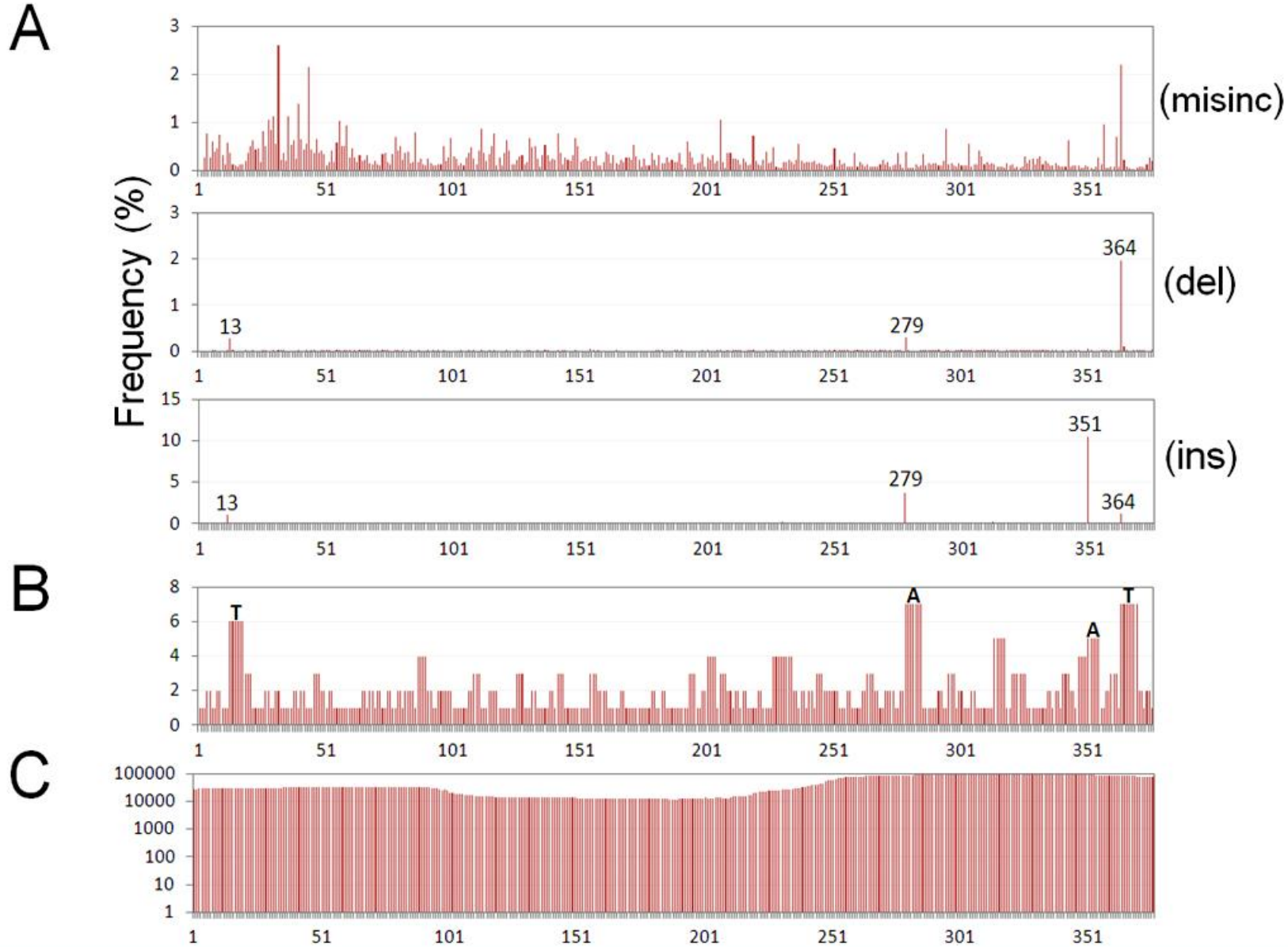


Supplementary method

Chloramphenicol acetyltransferase (CAT) assay.

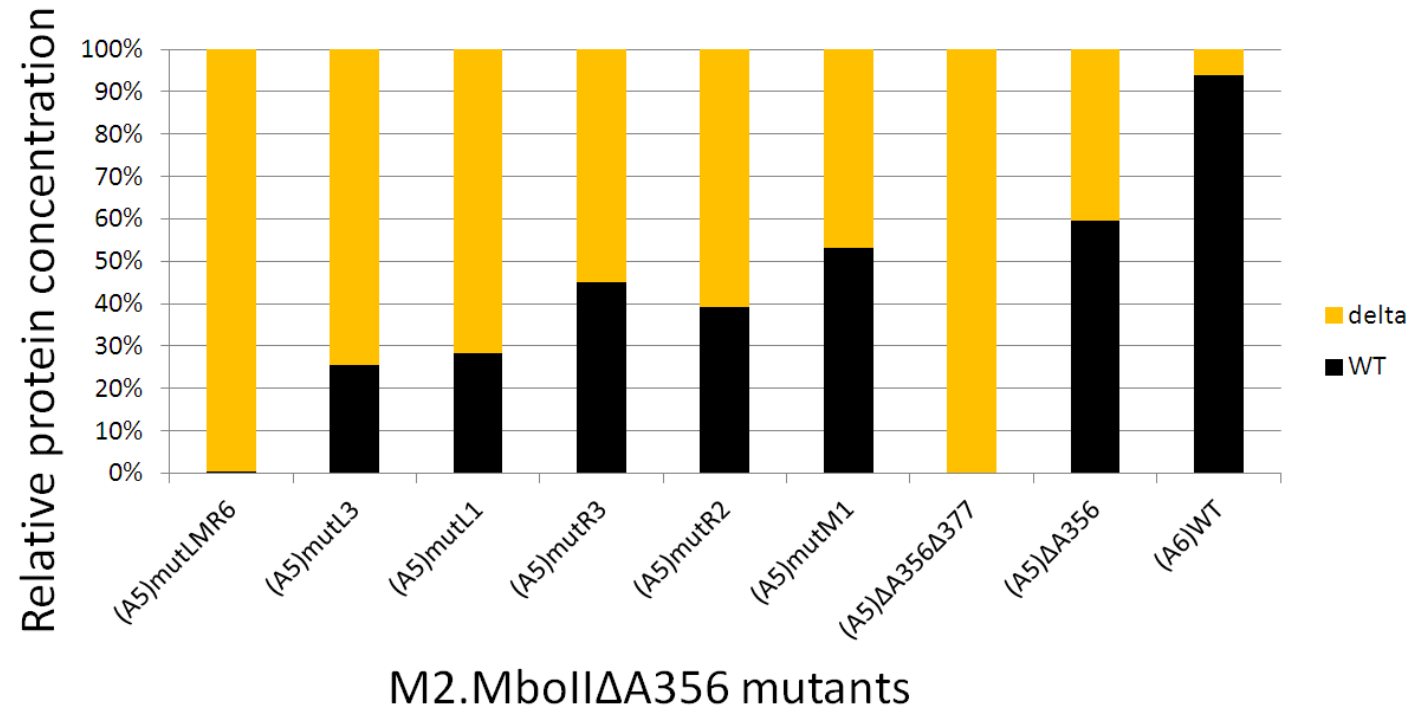
The CAT ELISA kit (Roche) was used to colorimetrically quantify CAT reporter levels based on the sandwich ELISA method. The recommended protocol was followed with some modifications. The cultures with appropriate plasmids were grown in M9 medium, induced with 1 mM IPTG at 3 h. Samples (1 ml each) were removed, pelleted and resuspended in 0.5 ml of lysis buffer (100 mM K/PO₄ pH 7.8, 1% Triton X-100, 5 mg/ml BSA, 1mM DTT, 5 mg/ml lysozyme) and kept for 20 min at room temperature. The centrifugally cleared cell extracts were diluted 1:25 and loaded onto microplate modules with anti-CAT antibodies prebound to the surface (SunriseTM – Tecan). The CAT concentration was calculated as nanograms per milliliter of culture at OD_{600nm}. Two separate experiments were performed on consecutive days.

Supplementary Figure S2



Supplementary Figure S3

mutants	WT	delta
(A ₅)mutLMR6	0,3	99,7
(A ₅)mutL3	25,5	74,5
(A ₅)mutL1	28,3	71,7
(A ₅)mutR3	45,1	54,9
(A ₅)mutR2	39,3	60,7
(A ₅)mutM1	53,2	46,8
(A ₅)ΔA356Δ377	0	100
(A ₅)ΔA356	59,6	40,4
(A ₆)WT	84,5	5,5



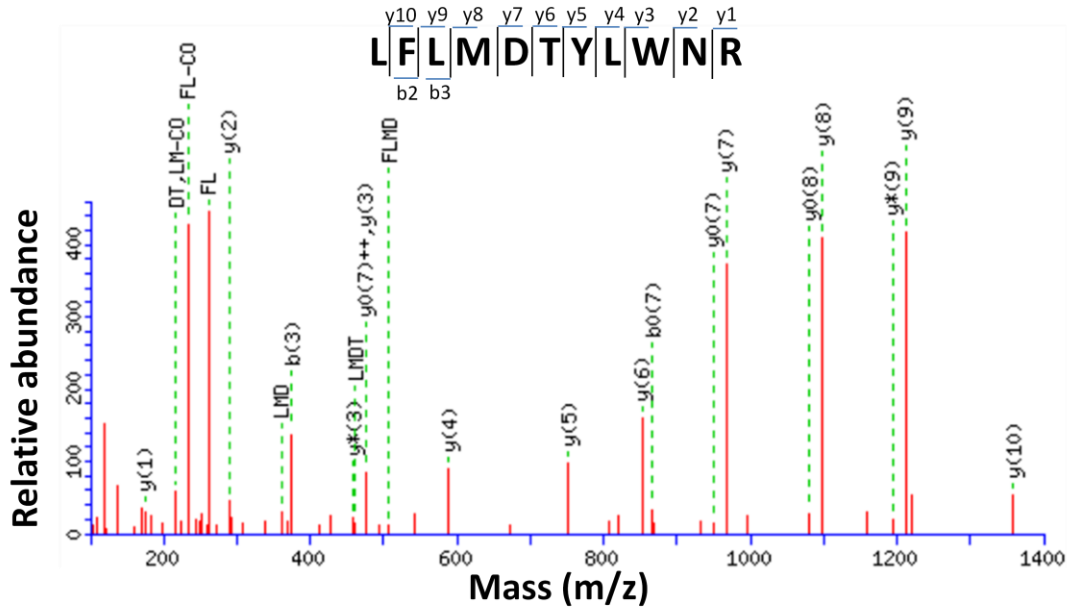
Supplementary Figure S4

A

LFLMDTYLWNR
122-132

Protein sequence coverage: **80%**. Matched peptides shown in **bold red**.

1 **MNTIFFK**DSR NMQEVPNNSV HLIITSPPYF NIKDYAKDGY QLNSHSNKHS
 51 **QQIGDIDS**YE YYLSEMLKVVW QECERVLKPN GKLVINTPLM PMLKKEMINTH
 101 YTRHIFDLNS DIQQTILKNT **KLFLMDTYLW** **NR**TNSSKKLM FGSYPYPRNF
 151 **YAQNTTE**FIT IYVKDGKPKD VSDEIKEKSK LSKQEWVEYT KQIWDIPIPS
 201 **KNDLAF**GVHS AIMPEEIPRR LIKLYSFYDD TVLDPFAGSG TTLKVAKELG
 251 **RRYIGY**ELME QYSEVICKKL ESI



Monoisotopic mass of neutral peptide $M_r(\text{calc})$ 1470.7329 $M_r(\text{expt})$ 1470.7373
 Ions Score: 79 Expect: 1.4e-08 Δm : 0.0043

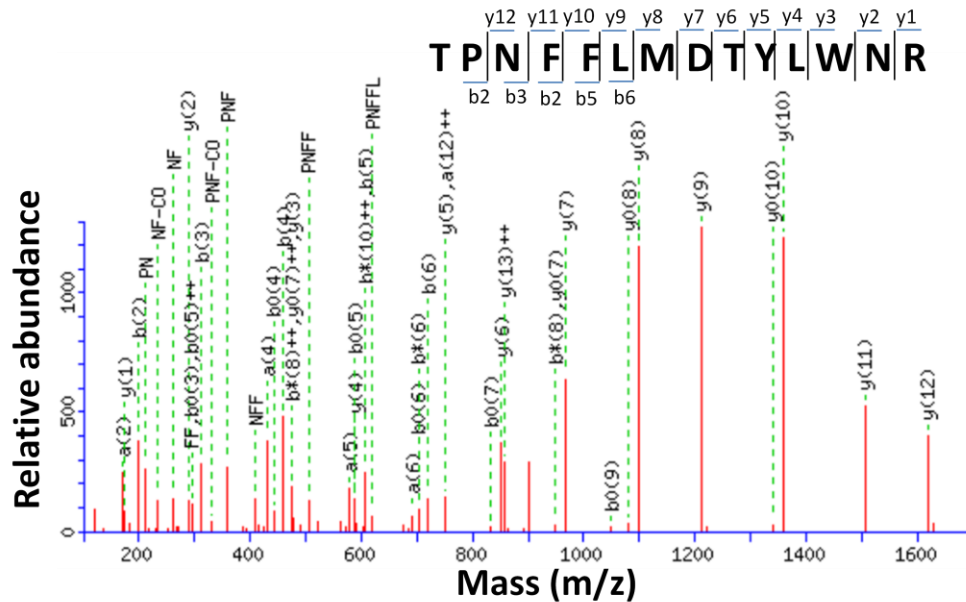
#	a	a ⁺⁺	b	b ⁺⁺	b [*]	b ⁺⁺	b ⁰	b ⁰⁺⁺	Seq.	y	y ⁺⁺	y [*]	y ^{*++}	y ⁰	y ⁰⁺⁺	#
1	86.0964	43.5519	114.0913	57.5493					L							11
2	233.1648	117.0861	261.1598	131.0835					F	1358.6562	679.8317	1341.6296	671.3184	1340.6456	670.8264	10
3	346.2489	173.6281	374.2438	187.6255					L	1211.5878	606.2975	1194.5612	597.7842	1193.5772	597.2922	9
4	477.2894	239.1483	505.2843	253.1458					M	1098.5037	549.7555	1081.4771	541.2422	1080.4931	540.7502	8
5	592.3163	296.6618	620.3112	310.6593			602.3007	301.6540	D	967.4632	484.2352	950.4367	475.7220	949.4526	475.2300	7
6	693.3640	347.1856	721.3589	361.1831			703.3484	352.1778	T	852.4363	426.7218	835.4097	418.2085	834.4257	417.7165	6
7	856.4273	428.7173	884.4223	442.7148			866.4117	433.7095	Y	751.3886	376.1979	734.3620	367.6847			5
8	969.5114	485.2593	997.5063	499.2568			979.4958	490.2515	L	588.3253	294.6663	571.2987	286.1530			4
9	1155.5907	578.2990	1183.5856	592.2965			1165.5751	583.2912	W	475.2412	238.1242	458.2146	229.6110			3
10	1269.6336	635.3205	1297.6286	649.3179	1280.6020	640.8046	1279.6180	640.3126	N	289.1619	145.0846	272.1353	136.5713			2
11									R	175.1190	88.0631	158.0924	79.5498			1

Seq	ya	yb	Seq	ya	yb	Seq	ya	yb
FL	233.1648	261.1598	FLM	364.2053	392.2002	FLMD	479.2323	507.2272
FLMDT	580.2799	608.2749	LM	217.1369	245.1318	LMD	332.1639	360.1588
LMDT	433.2115	461.2064	LMDTY	596.2749	624.2698	MD	219.0798	247.0747
MDT	320.1275	348.1224	MDTY	483.1908	511.1857	MDTYL	596.2749	624.2698
DT	189.0870	217.0819	DTY	352.1503	380.1452	DTYL	465.2344	493.2293
DTYLW	651.3137	679.3086	TY	237.1234	265.1183	TYL	350.2074	378.2023
TYLW	536.2867	564.2817	TYLWN	650.3297	678.3246	YL	249.1598	277.1547
YLW	435.2391	463.2340	YLWN	549.2820	577.2769	LW	272.1757	300.1707
LWN	386.2187	414.2136	WN	273.1346	301.1295			

B

TPNFFLMDTYLWNR
119-132

Protein sequence coverage: 82%. Matched peptides shown in **bold red**.
 1 **MNTIFFKDSR** NMQEVNNSV HLIITSPYF NIKDYAKDGY QLNSHSNKHS
 51 **QQIGDIDSYE** YLSEMLKVV QECERVLKPN GKLVIPTLM PMLKKEMNTH
 101 **YTRHIFDLNS** DIQQTILK**TP NFFLMDTYLW NR**TNSSKLM FGSYPYPRNF
 151 **YAQNTTEFIT** IYVKDGGPKD VSDEIKEKSK LSKQEWVEYT KQIWDIPIPS
 201 **KNDLAFGVHS** AIMPEEIPRR LIKLYSFYDD TVLDPFAGSG TTLKVAKELG
 251 **RRYIGYELME** QYSEVICKKL ESI

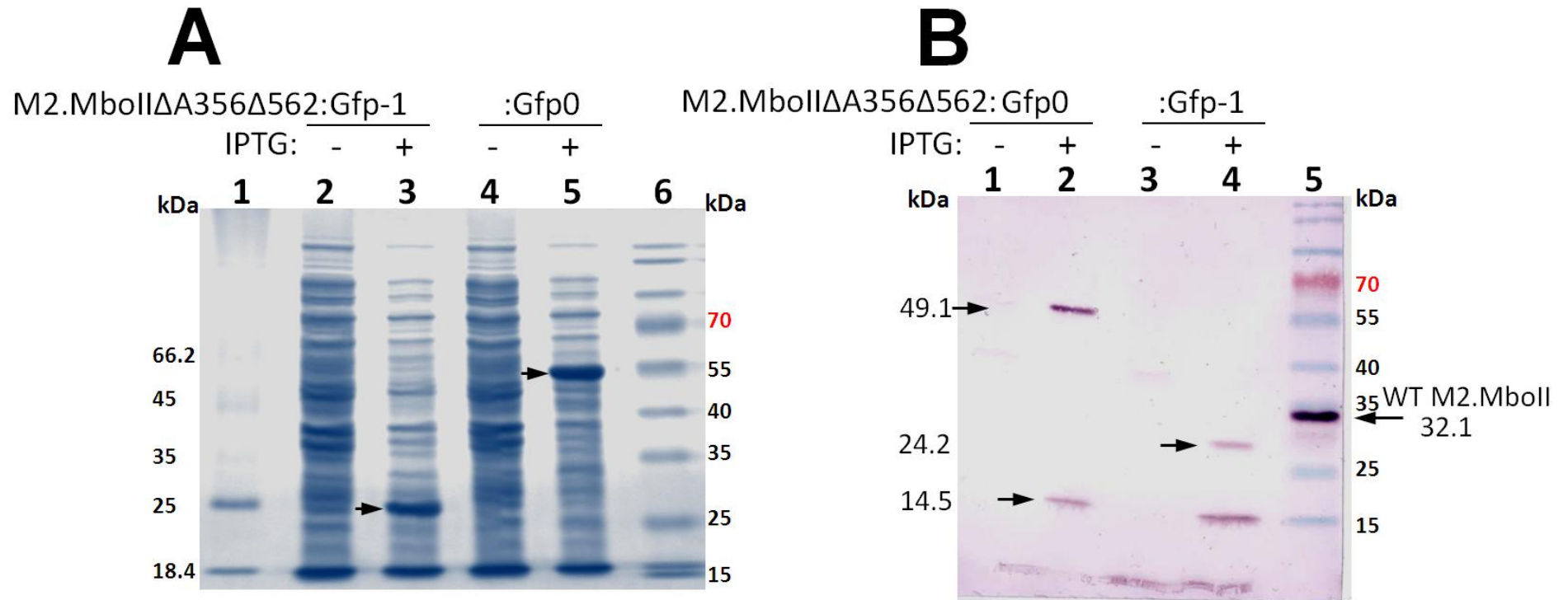


Monoisotopic mass of natural peptide $M_r(\text{calc})$: 1816.8607, $M_r(\text{expt})$: 1816.8690
 Ions Score: 111 Expect: 8.4e-12 Δm : 0.0084

#	a	a ⁺⁺	b	b ⁺⁺	b*	b ⁺⁺⁺	b ⁰	b ⁰⁺⁺	Seq.	y	y ⁺⁺	y*	y ⁺⁺⁺	y ⁰	y ⁰⁺⁺	#
1	74.0600	37.5337	102.0550	51.5311			84.0444	42.5258	T							14
2	171.1128	86.0600	199.1077	100.0575			181.0972	91.0522	P	1716.8203	858.9138	1699.7937	850.4005	1698.8097	849.9085	13
3	285.1557	143.0815	313.1506	157.0790	296.1241	148.5657	295.1401	148.0737	N	1619.7675	810.3874	1602.7410	801.8741	1601.7569	801.3821	12
4	432.2241	216.6157	460.2191	230.6132	443.1925	222.0999	442.2085	221.6079	F	1505.7246	753.3659	1488.6980	744.8527	1487.7140	744.3606	11
5	579.2926	290.1499	607.2875	304.1474	590.2609	295.6341	589.2769	295.1421	F	1358.6562	679.8317	1341.6296	671.3184	1340.6456	670.8264	10
6	692.3766	346.6919	720.3715	360.6894	703.3450	352.1761	702.3610	351.6841	L	1211.5878	606.2975	1194.5612	597.7842	1193.5772	597.2922	9
7	823.4171	412.2122	851.4120	426.2096	834.3855	417.6964	833.4015	417.2044	M	1098.5037	549.7555	1081.4771	541.2422	1080.4931	540.7502	8
8	938.4441	469.7257	966.4390	483.7231	949.4124	475.2098	948.4284	474.7178	D	967.4632	484.2352	950.4367	475.7220	949.4526	475.2300	7
9	1039.4917	520.2495	1067.4866	534.2470	1050.4601	525.7337	1049.4761	525.2417	T	852.4363	426.7218	835.4097	418.2085	834.4257	417.7165	6
10	1202.5551	601.7812	1230.5500	615.7786	1213.5234	607.2654	1212.5394	606.7733	Y	751.3886	376.1979	734.3620	367.6847			5
11	1315.6391	658.3232	1343.6340	672.3207	1326.6075	663.8074	1325.6235	663.3154	L	588.3253	294.6663	571.2987	286.1530			4
12	1501.7184	751.3629	1529.7134	765.3603	1512.6868	756.8470	1511.7028	756.3550	W	475.2412	238.1242	458.2146	229.6110			3
13	1615.7614	808.3843	1643.7563	822.3818	1626.7297	813.8685	1625.7457	813.3765	N	289.1619	145.0846	272.1353	136.5713			2
14									R	175.1190	88.0631	158.0924	79.5498			1

Seq	ya	yb	Seq	ya	yb	Seq	ya	yb
PN	184.1081	212.1030	PNF	331.1765	359.1714	PNFF	478.2449	506.2398
PNFFL	591.3289	619.3239	NF	234.1237	262.1186	NFF	381.1921	409.1870
NFFL	494.2762	522.2711	NFFLM	625.3167	653.3116	FF	267.1492	295.1441
FFL	380.2333	408.2282	FFLM	511.2737	539.2687	FLMD	626.3007	654.2956
FL	233.1648	261.1598	FLM	364.2053	392.2002	FLMD	479.2323	507.2272
FLMDT	580.2799	608.2749	LM	217.1369	245.1318	LMD	332.1639	360.1588
LMDT	433.2115	461.2064	LMDTY	596.2749	624.2698	MD	219.0798	247.0747
MDT	320.1275	348.1224	MDTY	483.1908	511.1857	MDTYL	596.2749	624.2698
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DTYLW	651.3137	679.3086	TY	237.1234	265.1183	TYL	350.2074	378.2023
TYLW	536.2867	564.2817	TYLWN	650.3297	678.3246	YL	249.1598	277.1547
YLW	435.2391	463.2340	YLWN	549.2820	577.2769	LW	272.1757	300.1707
LWN	386.2187	414.2136	WN	273.1346	301.1295			

Supplementary Figure S5



SUPPLEMENTARY FIGURE LEGENDS

Figure S1. Chloramphenicol acetyltransferase (CAT) production from frameshifting mutant *catΔG103*. CAT levels of WT *cat* and *catΔG103* genes, determined via immunoassay as described in “Supplementary methods” section, are shown as nanograms of protein per OD_{600nm} of culture. Expression from genes located on pACYC184, pDK178 and pDKcatD were constitutive while pETcatD ind was IPTG inducible. All plasmids confer chloramphenicol resistance. The mean values and standard deviations of two independent experiments are shown.

Figure S2. T7 RNA polymerase-based transcriptional errors distribution within mRNA of *mboIIM2A356* gene (1-376 nt) analysed by NGS. (A) Errors distribution and frequency of nucleotide misincorporations (misinc), deletions (del) and insertions (ins), respectively. Note: scale varies from chart to chart. (B) Nucleotide homopolymers distribution. (C) Sequencing depth. The bar charts show read numbers per base.

Figure S3. Densitometric quantification of reciprocal proportion between full-length (WT) and short M2.MboIIA356 (delta) products in given site-specific mutants of *mboIIM2A356* gene (see Figure 1). Yellow- fraction of short protein product (14.5 kDa) and its main degradation product. Black – fraction of full-length product (32 kDa).

Figure S4. Heterologous mode of A356 nucleotide deletion restoration by identification of internal peptides of M2.MboIIA356 detected in LC-MS-MS/MS analysis. (A) The ion spectrum of the mass-to-charge (m/z) values of tryptic-digest derivative LFLMDTYLWNR [122-132] by MASCOT analysis. (B) The ion spectrum of the (m/z) values of the tryptic-digest derivative TPNFFLMDTYLWNR [119-132]. Nomenclature for sequence ions in mass spectra of peptides according to (79). Masses of several matched ions of the most intense peaks are in bold red in tables containing all possible combinations of ion derivatives.

Figure S5. Immunodetection of M2.MboIIA356Δ562-GFP hybrids. (A) Protein lysates were resolved by 10%-SDS-PAGE and stained with Coomassie brilliant blue. Lane 1, Unstained protein molecular weight marker (Fermentas). Lane 2 and 3, non-induced and IPTG induced lysates of ER2566 cells bearing *mboIIM2A356Δ562gfp-1* gene. Lane 4 and 5, non-induced and IPTG induced lysates of ER2566 cells bearing *mboIIM2A356Δ562gfp0*

gene. Lane 6, PageRuler prestained protein ladder (Fermentas). **(B)** Western-blotting with anti-M2.MboII rabbit polyclonal antibody/anti-rabbit-AP after expression of single-nucleotide deletion fusion gene *mboIIM2ΔA356Δ562gfp0* (lane 1 and 2, non-induced and IPTG induced lysates, respectively) and double-nucleotide deletion fusion gene *mboIIM2ΔA356Δ562gfp-1* (lane 3 and 4, non-induced and IPTG induced lysates, respectively). Lane 5, PageRuler prestained protein ladder (Fermentas).

Supplementary Table S1. Plasmids used in this study.

Plasmid name (short)	Relevant feature(s)	Reference
pANTS	Integrative vector with λ <i>attP</i> site, pBR322 ori, Amp ^R	(80)
pANTSaraT7mboBΔA356	pANTS derivative with <i>mboIIM2ΔA356</i> gene under independent control of <i>P</i> _{araBAD} and T7 phage promoters , excised from pBAD24/T7mboBA5 and cloned between ClaI and HindIII sites	This study
pBAD24	arabinose inducible <i>araBAD</i> promoter, <i>araC</i> , pBR322 ori, Amp ^R	(81)
pBAD24/T7mboBA5	pBAD24 derivative carrying <i>mboIIM2ΔA356</i> gene with T7 promoter cloned between XbaI-HindIII, excised from pETmboIIMB.4	This study
pBR222	pMB1 ori, Amp ^R Tc ^R	(82)
pDK178	pKK232-8 plasmid with <i>cat</i> gene under control of <i>pvuIIC</i> promoter	(33)
pDKcatD	pDK178 derivative with frameshifting G103 deletion mutation in the <i>cat</i> gene	This study
pET24	IPTG inducible T7 promoter, pBR ori, Km ^R	Novagene
pET24a	Used for translational fusion with RBS and gene <i>10</i> of T7, IPTG inducible T7 promoter, pBR ori, Km ^R	Novagene
pETcatD	pET24 derivative with <i>catΔG103</i>	This study

	gene of pDKcatD, cloned between SalI/XhoI, blunted by Klenow fragment	
pET24mboIIMB.3 [(A ₆)WT]	pET24a derivative with the wild type <i>mboIIM2</i> methyltransferase gene cloned between NdeI-BamHI sites	(30)
pET24mboIIMB.4 [(A ₅)ΔA356]	pET24a derivative with frameshifting A356 deletion mutation in <i>mboIIM2</i>	This study
pET24mbo(A₅)ΔStopMet	pET24mboIIMB.4 derivative with double codon replacement, 124 TAA stop to Tyr TAC (0 frame) and Lys 125 TAG to Leu CTC (-1 frame)	This study
pET24mbo(A₅)mutL1 [(A ₅)mutL1]	pET24mboIIMB.4 derivative with single codon replacement, Lys 118 AAA to synonymous AAG	This study
pET24mbo(A₅)mutL3 [(A ₅)mutL3]	pET24mboIIMB.4 derivative with double codon replacement, Leu 117 TTA codon to synonymous CTG and Lys 118 AAA to synonymous AAG	This study
pET24mbo(A₅)mutM1 [(A ₅)mutM1]	pET24mboIIMB.4 derivative with single codon replacement, Asn 121 AAC to Ser AGC	This study
pET24mbo(A₅)mutR2 [(A ₅)mutR2]	pET24mboIIMB.4 derivative with double codon replacement, Phe 122 TTT to synonymous TTC, and Phe 123 TTT to synonymous TTC	This study
pET24mbo(A₅)mutR3 [(A ₅)mutR3]	pET24mboIIMB.4 derivative with triple codon replacement, Asn 121	This study

	AAC to AGC Ser, Phe 122 TTT to TCT Ser and Phe 123 TTT to TCT Ser	
pET24mbo(A₅)mutLMR6 [(A₅)mutLMR6]	pET24mboIIMB.4 derivative with six replacements, Leu 117 TTA to synonymous CTG, Lys 118 AAA to synonymous AAG, Asn 121 AAC to AGC Ser codon, Phe 122 TTT to TCT Ser and Phe 123 TTT to TCT Ser	This study
pET24mboBΔG112 [ΔG112]	pET24mboIIMB.3 derivative with frameshifting G112 deletion mutation in <i>mboIIM2</i>	This study
pET24mboBΔT327 [ΔT327]	pET24mboIIMB.3 derivative with frameshifting T327 deletion mutation in <i>mboIIM2</i>	This study
pET24mboBΔT327ΔA328 [ΔT327ΔA328]	pET24mboIIMB.3 derivative with frameshifting T327/A328 double deletion mutation in <i>mboIIM2</i>	This study
pET24mboBΔA355ΔA356 [ΔA355ΔA356]	pET24mboIIMB.4 derivative with frameshifting A355/A356 double deletion mutation in <i>mboIIM2</i>	This study
pET24mboBΔG112ΔA356 [ΔG112ΔA356]	pET24mboIIMB.4 derivative with frameshifting G112/A356 double deletion mutation in <i>mboIIM2</i>	This study
pET24mboB+T372	pET24mboIIMB.3 derivative with frameshifting T372 insertion mutation in <i>mboIIM2</i>	This study
pET24mboBΔA356ΔT372 [ΔA356ΔT372]	pET24mboIIMB.4 derivative with frameshifting A356/T372 double deletion mutation in <i>mboIIM2</i>	This study
pET24mboBΔA356+T371	pET24mboIIMB.4 derivative with	This study

[ΔA356+T371]	-1 frameshifting A356 deletion and wild-type 0-frame restoring insertion T371 in <i>mboIIM2</i>	
pET24mboBΔG630 [AG630]	pET24mboIIMB.3 derivative with frameshifting T273 insertion mutation in <i>mboIIM2</i>	This study
pET24mboBC621GΔG630 [AC621ΔG630]	pET24mboB Δ G630 derivative with C621 altered to G621 in <i>mboIIM2</i>	This study
pET24mboBwtΔ378	pET24mboIIMB.3 derivative with proximal fragment of <i>mboIIM2</i> (378 nt) with BamHI sites on its distal terminus	This study
pET24mboBΔA356Δ377 [AA356Δ377]	pET24mboIIMB.4 derivative with proximal fragment of <i>mboIIM2ΔA356</i> (377 nt) with BamHI sites on its distal terminus	This study
pETmboBwtΔ378gfp0	pET24mboB Δ 378 derivative with 378 nt proximal part of <i>mboIIM2wtΔ378</i> and <i>gfp0</i> (both 0 frame)	This study
pETmboBwtΔ378gfp-1	pET24mboB Δ 378 derivative with 378 nt proximal part of <i>mboIIM2wtΔ378</i> (0 frame) and <i>gfp-1</i> (Δ A390, - 1 frameshift)	This study
pETmboBΔA356Δ377gfp0	pET24mboB Δ A356 Δ 377 derivative with 377 nt proximal part of <i>mboIIM2ΔA356Δ377</i> (-1 frameshift) and <i>gfp0</i> (0 frame)	This study

pETmboBΔA356Δ377gfp-1	pET24mboBΔA356Δ377 derivative with 377 nt proximal part of <i>mboIIM2ΔA356Δ377</i> (-1 frameshift) and <i>gfp-1</i> (ΔA389, -1 frameshift)	This study
pETmboBΔA356Δ562	pET24mboIIMB.4 derivative with proximal fragment of <i>mboIIM2ΔA356Δ562</i> (562 nt) with BamHI sites on its distal terminus	This study
pETmboBΔA356Δ562gfp0	pETmboBΔA356Δ562 derivative with 562 nt proximal part of <i>mboIIM2ΔA356Δ562</i> (-1 frameshift) and <i>gfp0</i> (0 frame)	This study
pETmboBΔA356Δ562gfp-1	pETmboBΔA356Δ562 derivative with 562 nt proximal part of <i>mboIIM2ΔA356Δ562</i> (-1 frameshift) and <i>gfp-1</i> (ΔA574, -1 frameshift)	This study
pETmboA5gfp0	pETmboBΔA356Δ377gfp0 derivative containing fusion fragment of <i>mboBΔA356Δ377</i> (from 349-377 nt) and <i>gfp0</i> inserted between NheI-EcoRI sites of pET24a	This study
pETmboA5NoMetgfp0	pETmboA5gfp0 derivative with altered internal ATG codon to AGG, proximal to <i>gfp</i>	This study
pET24aNcuIBM	pET24a derivative with WT <i>ncuIM2</i> methyltransferase gene cloned between NdeI-BamHI sites	(30)
pETncuBΔA357	pET24aNcuIBM derivative with	This study

	frameshifting A357deletion mutation in <i>ncuIM2</i>	
pGreenTIR	IPTG inducible <i>lac</i> promoter with <i>gfp</i> from <i>Aequora victoria</i> , ori pUC, Amp ^R	(35)
pINTtsCm	pSC101 temperature-sensitive replicon contains λ integrase gene under P_R/cI control Cm ^R	(83)
pSC101	pSC101 replicon, Tc ^R	(84)
pT7-7	pBR322 derivative with T7 promoter, Amp ^R	(3)
pT7-7.1M	pT7-7 derivative carrying <i>mboIIM1</i>	(32)
pT7-7mbo1ΔA462	pT7-7.1M derivative with frameshifting A462 deletion mutation in <i>mboIIM1</i>	This study
pUC18	pUC ori, Amp ^R	(85)

Supplementary Table S2. List of oligonucleotides used in this study.

No	Name (<u>forward</u> , <u>reverse</u>)	Sequence (5'-3')	Comment
1	C1	AATTCGGATGTTGCTAGCAGGAAGA	1 and 2 were used to create an oligoduplex with a specific MboII recognition site (underlined)
2	C2	AGCTTCTTCCTGCTAGCAACATCCG	
3	C3	AATTCGGATGTTGCTAGCAGGAACA	3 and 4 were used to create an oligoduplex with no MboII recognition site
4	C4	AGCTTGTTCCTGCTAGCAACATCCG	
5	BsaR (fwd)	ATGGTTATCAGCTAAATAGCCATAGCAA	5 and 6 were used in PCR to delete G112 in <i>mboIIM2</i> (damage of BsaBI restriction site)
6	BsaL (rev)	TTTGGCATAGTCCTTAATATTAATAAGG TG	
7	SwaR (fwd)	AGCGACATTCAACAAACCATTTTAAAAAAC	7 and 8 were used in PCR to delete T327 and/or A328 in <i>mboIIM2</i> (damage of SwaI restriction site)
8	SwaL (rev)	TTTAAATCAAAAATATGTCTGGTATAATGG G	
9	KLFnew (fwd)	ACACCAAGCTCTTCTTAATGGACACTT	9 and 10 were used in PCR to delete A355 and A356 in <i>mboIIM2</i>
10	MboDL (rev)	TTTAAAATGGTTTGTGAATGTCGC	
11	FspR (fwd)	GCGATTATGCCAGAAGAAATCCCA	11 and 12 were used in PCR to delete A630 in <i>mboIIM2</i>
12	FspL (rev)	GAATGCACGCCAAATGCCAAATCA	
13	NruR (fwd)	GGGGTGCATTCGCGATTATGCCAG	13 and 14 were used in PCR to alter C621 to G in <i>mboIIM2ΔA630</i>
14	NruL (rev)	AAATGCCAAATCATTTTTACTGGG	
15	RT-mboB	GATGAATTGGTTCTATTCCAAAGATAAGTG	Primer for RT-PCR reaction of <i>mboIIM2ΔA356</i> mRNA pool (corresponding to residues 377-

			406)
16	mboB-P (fwd)	GTTATAGTCATATGAACACCATATTT	Forward primer to proximal part of <i>mboIIM2</i> with NdeI site overlapping the ATG start codon. 16 and 17 were used for PCR to get shorter variants (377-378 nt) of wild-type <i>mboIIMΔ378</i> or mutated <i>mboIIM2ΔA356Δ377</i> genes, respectively, and <i>mboIIM2ΔA356Δ562</i> mutated variant
17	mboBdelta (rev)	GGGATCCATTAATAAAAAGTTTGGTG	Internal reverse primer to <i>mboIIM2</i> introducing BamHI site
18	bamGFP (fwd)	GGGATCCAAAAGGAGAAGAAGCTTTTCACT GGAG	Primers 18 and 21 were used in PCR to fuse 377 nt proximal part of <i>mboIIMΔ377</i> or <i>mboIIM2ΔA356Δ377</i> with <i>gfp</i> (<i>gfp0</i> , frame 0)
19	bamGF-1 (fwd)	GGGATCCAAAGGAGAAGAAGCTTTTCACTG GAG	Primers 19 and 21 were used in PCR to fuse 377 nt proximal part of <i>mboIIMΔ377</i> or <i>mboIIM2ΔA356Δ377</i> with <i>gfp</i> (<i>gfp-1</i> , frame -1).
20	gfp-1A5 (fwd)	AGGCTAGCTTAAAAACACCAAAGCTTTTTT AA	Primers 20 and 21 were used in PCR to fuse 28 nt part of <i>mboIIM2Δ356</i> gene (349-377 nt region, downstream of NheI site) with <i>gfp0</i> . As a template the plasmid pET24mboBΔA356Δ377gfp0 was used

21	Gfpdown (rev)	CAGTGCCAAGCTTGCATGCCT	Reverse primer to distal part of the <i>gfp</i> carrying on pGreenTIR plasmid (35)
22	TnaGor (fwd)	CAAACCTTTTTTAAGGGATCCAAAAGGAG	22 and 23 were used in PCR to alter internal start codon ATG to AGG in a fused gene containing 28 nt part of <i>mboIIM2ΔA356</i> and <i>gfp0</i>
23	TnaDol (rev)	CTTTTGGATCCCTTAAAAAAAGTTTGGTG	
24	MboBR (fwd)	ACACCAAACCTTTTTTAATGGACACTTATC	Forward primer for <i>mboIIM2ΔA356</i> mutagenesis
25	MboBL1 (rev)	CTTTAAAATGGTTTGTGTAATGTCGCTATTT	24 and 25 were used in PCR reaction to replace AAA Lys 118 codon to synonymous AAG in <i>mboIIM2ΔA356</i> (interruption of L-tract poly(5A) run, (A ₅)mutL1)
26	MboBL3 (rev)	CTTCAGAATGGTTTGTGTAATGTCGCTATTT	24 and 26 were used in PCR reaction to replace AAA Lys 118 codon to synonymous AAG, and TTA Leu 117 codon to synonymous CTG codon in <i>mboIIM2ΔA356</i> (interruption of L-tract poly(4T+5A) run, (A ₅)mutL3)
26a			9 and 26 were used in PCR reaction to replace 6 nucleotides in codons AAA Lys 118 to synonymous AAG, TTA Leu 117 to synonymous CTG, AAC Asn 121 to AGC Ser codon, and TTT Phe 122 codon to TCT Ser, and TTT Phe 123 codon to TCT Ser in <i>mboIIM2ΔA356</i> (interruption of L-tract of poly(4T+5A), M region (triple A), and R-tract of poly(7T),

			(A ₅)mutLMR6)
27	MboBRII (fwd)	<u>T</u> AATGGACACTTATCTTTGGAATAGAACC	Forward primer for insertion of eighth <u>T</u> in <i>mboIIM2</i> or <i>mboIIM2ΔA356</i> mutagenesis
28	MboBLT2 (rev)	GAAGAAGTTTGGTGTTTTTTAAAATGGTTTG	27 and 28 were used in PCR reaction to replace AAC Asn 121 codon to AGC Ser codon in <i>mboIIM2ΔA356</i> gene (interruption of M region (triple A), (A) ₅ MutM1)
29	3A377 (rev)	AAAAAAGCTTGGTGTTTTTTAAAATGG	27 and 29 were used in PCR reaction to replace TTT Phe 122 codon to synonymous TTC, and TTT Leu 123 codon to synonymous TTC codon in <i>mboIIM2ΔA356</i> (interruption of R-tract poly(7T) run, (A) ₅ MutR2)
30	MboBLIII plus (rev)	GTTTGGTAAAATTTTTGTGGTTTGAAAAA A	27 and 30 were used in PCR reaction to insert additional T371 nucleotide <i>mboIIM2ΔA356</i> (restoration of ΔA356 frameshifting mutation, [ΔA356+T371] resulting in fixing four erroneous amino acids (119-Thr-Pro-Asn-Phe -122)
31	MboIIII2 plus (rev)	GTTTGGTAAAATTTTTGTGGTTTGAAAAA AA	27 and 31 were used in PCR reaction to insert additional T372 nucleotide in <i>mboIIM2</i> (frameshifting mutation, pET24mboB+T372)
32	MboDL (rev)	TTTAAAATGGTTTGTGGTTGAATGTCGC	Reverse primer for <i>mboIIM2ΔA356</i> mutagenesis
33	KLFpoliT	AACACCAAGCTCTTCTTAATGGACACTT	32 and 33 were used in PCR

	(fwd)		reaction to replace AAC Asn 121 codon to AGC Ser, TTT Leu 122 codon to TCT Ser, and TTT Leu 123 codon to TCT Ser in <i>mboIIM2ΔA356</i> (interruption of M (triple A) tract and R-tract of poly(7T), (A) ₅ MutR3)
33	mboB551 (rev)	<u>GGGATCC</u> ACCCATTCTTGCTTAC	Internal reverse primer to <i>mboIIM2ΔA356</i> introducing BamHI site in 562 nt.
34	MboBright (fwd)	GACACTTATCTTTGGAATAGAACC	34 and 35 were used for PCR to eliminate premature 124 TAA stop codon of <i>mboIIM2ΔA356</i> by changing distal A to C and replace overlapping 125 ATG codon with CTC for Leu (pET24mbo(A ₅)ΔStopMet)
35	MboMetStop (rev)	<u>GAGT</u> AAAAAAAGTTTGGTGTTTTT	
36	ncuBR (fwd)	CCAATCTTTTTTTGATGGATACTTATCTG	36 and 37 were used for PCR to delete A357 in <i>ncuIM2</i> (32)
37	ncuBL (rev)	ATTTTTTAAAATAGTTTGTGGATGTCGCTG	
38	mbo1G (fwd)	CATTTTAAAAATGGTAAACGCTGGTTTCCC	38 and 39 were used in PCR to delete A462 in <i>mboIIM1</i> (29)
39	mbo1D (rev)	GAACCAGCGTTTACCATTTTAAAATGCC	
40	catDR (fwd)	CCGTAAAAAAAATAAGCACAAGTTTTATCC	40 and 41 were used in PCR to delete G103 in <i>cat</i> from pDK178 plasmid (33)
41	catDL (rev)	CTTATTTTTTTTACGGTCTTTAAAAGGCCG	

Supplementary Table S3. Errors frequency and sequencing depth of *mboIIM2A356* mRNA pool (1-376 nt)

base No	misincorporation rate (%)	insertions rate (%)	deletions rate (%)	homopolymer length	sequencing depth
0	0.0	0.0	0.0	1	28289
1	0.0	0.0	0.0	1	28805
2	0.2713844039848849	0.0034352456200618343	0.0	1	29110
3	0.7649823333676374	0.0	0.0	2	29151
4	0.26361737820534764	0.0	0.0	2	29209
5	0.5952380952380952	0.0	0.0034209085933223867	1	29232
6	0.3726750547045952	0.0	0.010257111597374179	1	29248
7	0.4476795844439888	0.0	0.0	2	29262
8	0.7273596503209945	0.0	0.0	2	29284
9	0.3138860457181849	0.0	0.0	1	29310
10	0.1159380754279479	0.0034099433949396443	0.0	1	29326
11	0.5685048322910745	1.0567501588469383	0.013376584289201751	1	29903
12	0.3473381871618463	0.006679580522343197	0.28388217219958584	6	29942
13	0.11315982160686948	0.0	0.016641150236304334	6	30046
14	0.09632951336987211	0.0	0.0	6	30105
15	0.07602300522244992	0.0	0.0	6	30254
16	0.10896843217540617	0.0	0.0	6	30284
17	0.12535462162697103	0.10886059246552747	0.0	6	30314
18	0.19118568085176516	0.0	0.019777829053630878	3	30337
19	0.3591433278418451	0.0	0.0	3	30350
20	0.4937621383192337	0.003291747588794891	0.0	3	30379
21	0.6252879615612452	0.0	0.0032909892713749752	1	30386
22	0.4343676988383955	0.003290664385139359	0.0	1	30389
23	0.45056896665131885	0.0	0.0	1	30406
24	0.16435474327789099	0.0	0.0	1	30422
25	0.8082196263211282	0.0	0.009816432708353784	1	30561
26	0.5105337986299598	0.0	0.0032312265736073415	2	30948
27	1.0484885634093621	0.0	0.0	2	30997
28	0.8274800346386991	0.0	0.0	1	31179
29	1.1158853331623164	0.0	0.006413134098634002	1	31186
30	0.5564438759194116	0.0	0.0	2	31270
31	2.6054154278955277	0.0031968287458840833	0.006393657491768167	2	31281
32	0.2173426662831208	0.003196215680634129	0.006392431361268258	1	31287
33	0.3511460128966354	0.006384472961757006	0.003192236480878503	1	31326
34	0.18510244462883768	0.0	0.0	1	31334
35	1.1268137609769917	0.0	0.0	1	31771
36	0.5331088664421998	0.0	0.0	1	32076
37	0.6093011688634669	0.0031086794329768714	0.0	2	32168
38	0.23308574447586786	0.0	0.0	2	32177
39	1.3926367048168482	0.0	0.003101640767966254	1	32241
40	0.6386210744954584	0.0	0.0	2	32257
41	0.43324874667326857	0.0030946339048090613	0.0	2	32314
42	0.5501808178530585	0.003090903471084598	0.003090903471084598	1	32353
43	2.1419299004759846	0.009272423811584348	0.0	1	32354
44	0.43556159644136905	0.00308908933646361	0.00308908933646361	1	32372
45	0.3631886734379809	0.0	0.012311480455524777	3	32490
46	0.6412026384414787	0.0	0.0	3	32595
47	0.3544810034539175	0.0	0.0	3	33006
48	0.40563039200847584	0.0	0.00908127743302558	2	33035
49	0.34349764975292274	0.0030131372785344103	0.01506568639267205	2	33188

50	0.09627534749383236	0.0030086046091822613	0.027077441482640352	1	33238
51	0.15904453246909134	0.0030008402352658743	0.0030008402352658743	2	33324
52	0.4158937226976243	0.0	0.0	2	33422
53	0.1645228836374514	0.0	0.0	1	33430
54	0.5611805576175064	0.0	0.0029692092995635263	1	33679
55	1.029948650975038	0.0029681517319165357	0.008904455195749606	1	33691
56	0.5107732049550872	0.0	0.0	1	34066
57	0.5081330490903251	0.0	0.005840609759658909	1	34243
58	0.9381575870937573	0.0	0.005845218611176058	1	34216
59	0.2598464278415229	0.005839245569472424	0.002919622784736212	1	34251
60	0.4493201843963355	0.0	0.0	1	34274
61	0.2570018398995357	0.002920475453403814	0.005840950906807628	1	34241
62	0.16054644170704652	0.0	0.0	1	34258
63	0.30413625304136255	0.01737921445950643	0.002896535743251072	1	34524
64	0.19690169393369047	0.0	0.014478065730418415	2	34535
65	0.2229105752250818	0.005789885070781345	0.008684827606172018	2	34543
66	0.30973195160076417	0.0028946911364557404	0.008684073409367221	1	34546
67	0.14174549451820995	0.0	0.005785530388498366	2	34569
68	0.1268212115849702	0.0	0.0	2	33906
69	0.1799516195645761	0.0	0.0	1	33898
70	0.12983947119924458	0.005901794145420208	0.008852691218130312	2	33888
71	0.10349824052991098	0.0	0.0	2	33817
72	0.32238029043802313	0.002957617343468102	0.002957617343468102	1	33811
73	0.35371101809821376	0.008842775452455345	0.005895183634970229	1	33926
74	0.16598002311864607	0.0	0.005927857968523074	2	33739
75	0.1274338381293898	0.0	0.0	2	33743
76	0.33749777961987093	0.0029605068387707975	0.0	1	33778
77	0.6925740669488265	0.0	0.00591943646964809	1	33787
78	0.3969899863719855	0.0	0.005925223677193814	2	33754
79	0.4976598139700219	0.0029622607974406066	0.0	2	33758
80	0.20881186051367717	0.0	0.0029830265787668168	1	33523
81	0.3512322895582808	0.0	0.0	2	33596
82	0.3889216263995286	0.0	0.0	2	33940
83	0.1324893272486383	0.0	0.002944207272191962	2	33965
84	0.17666283897182228	0.0029443806495303712	0.0	2	33963
85	0.7851324727262035	0.01470285529449819	0.0	1	34007
86	0.16654978962131836	0.0	0.029219261337073397	4	34224
87	0.22744503411675512	0.0	0.0	4	34294
88	0.11665208515602217	0.0	0.0	4	34290
89	0.09946173648490522	0.005850690381465013	0.0	4	34184
90	0.23964497041420119	0.0	0.0029585798816568047	2	33800
91	0.13784423601330495	0.0	0.0	2	33371
92	0.10791043433949822	0.0	0.0029975120649860616	1	33361
93	0.09532888465204957	0.003177629488401653	0.0	1	31470
94	0.11434379367297676	0.0	0.0031762164909160204	2	31484
95	0.11870388193776066	0.0	0.0	2	31170
96	0.5019824669891965	0.0	0.003637554108617366	2	27491
97	0.17966360856269112	0.0	0.0	2	26160
98	0.25847650904667785	0.0	0.0	2	26308
99	0.6708806763097686	0.0	0.0	2	25787
100	0.2923562974489555	0.0	0.0	1	21207
101	0.22748375116063138	0.004642525533890436	0.0	1	21540
102	0.0985630544171811	0.0	0.0	1	19277
103	0.14520032266738372	0.0	0.005377789728421619	1	18595

104	0.10198604401502952	0.0	0.0	1	18630
105	0.2733612273361227	0.0	0.0	1	17925
106	0.34700494908697876	0.0	0.005688605722737357	2	17579
107	0.4703082502266546	0.005666364460562103	0.0	2	17648
108	0.2332633543270352	0.0	0.040821087007231166	3	17148
109	0.13159468835985166	0.0	0.0	3	16718
110	0.4072171407091843	0.0	0.0	3	15962
111	0.8635254364557912	0.0	0.012514861397910018	1	15981
112	0.3650783659595896	0.0	0.0	1	15887
113	0.1941990853849527	0.006264486625321055	0.0	1	15963
114	0.33110514150059345	0.0	0.006247266820765915	2	16007
115	0.4931951554501186	0.0	0.0	2	16018
116	0.7676818525044048	0.0	0.006292474200855777	2	15892
117	0.0881667611310536	0.006297625795075257	0.0	2	15879
118	0.25501412916121025	0.0	0.0	1	14509
119	0.10341974627688913	0.0	0.0	1	14504
120	0.3645285664213109	0.007010164738871364	0.0	1	14265
121	0.6140534505617193	0.0	0.020933640360058615	1	14331
122	0.3942359978249048	0.0	0.0	1	14712
123	0.12232415902140673	0.020387359836901122	0.0	1	14715
124	0.11118059898547704	0.0	0.0	1	14391
125	0.21079258010118043	0.0	0.0070264193367060145	3	14232
126	0.2937062937062937	0.0	0.0	3	14300
127	0.3217458208015668	0.006994474365251452	0.0	3	14297
128	0.11900595029751487	0.0	0.0	1	14285
129	0.16349161216946262	0.0	0.0071083309638896785	1	14068
130	0.6592939174819226	0.0	0.00708918190840777	1	14106
131	0.47771836007130125	0.0	0.0	2	14025
132	0.4999285816311956	0.0	0.0	2	14002
133	0.23546200499464856	0.007135212272565109	0.007135212272565109	1	14015
134	0.07830853563038372	0.0	0.0	1	14047
135	0.2991239940175201	0.0	0.0	1	14041
136	0.5257175333901677	0.0	0.014208581983518044	1	14076
137	0.3183812084335645	0.0	0.007075137965190322	1	14134
138	0.20122170319798777	0.0	0.0	2	13915
139	0.2443055256161529	0.0071854566357692036	0.0	2	13917
140	0.20708369037417879	0.007140816909454442	0.0	1	14004
141	0.7515598411798071	0.0	0.007090187180941577	3	14104
142	0.36521983424638294	0.0	0.0	3	14238
143	0.12701100762066045	0.007056167090036692	0.007056167090036692	3	14172
144	0.27399185049880564	0.0	0.01405086412814388	1	14234
145	0.21493050580312367	0.0	0.0	1	13958
146	0.19233509046872774	0.0	0.0	1	14038
147	0.3039739027283511	0.0	0.0	1	13488
148	0.6556169429097606	0.0	0.014732965009208102	1	13575
149	0.5083247384706056	0.007367025195226167	0.0	1	13574
150	0.17173150153065034	0.0	0.0	1	13393
151	0.2129673450070989	0.0	0.0	1	12678
152	0.2342651881930345	0.0	0.0	1	12806
153	0.18695956999298902	0.0	0.0	1	12837
154	0.28004667444574094	0.0	0.046674445740956826	3	12855
155	0.19452225334578274	0.0	0.007780890133831311	3	12852
156	0.29466501240694787	0.0	0.0	3	12896
157	0.08527792852159082	0.0	0.007752538956508256	2	12899

158	0.10683760683760685	0.0	0.0	2	13104
159	0.17358490566037735	0.0	0.0	2	13250
160	0.391713747645951	0.0	0.0	2	13275
161	0.3371796793046606	0.00749288176232579	0.0	1	13346
162	0.13259496139146712	0.0	0.0	1	12821
163	0.3148366784730421	0.0	0.0	1	12705
164	0.14938281311423854	0.0	0.007862253321802029	1	12719
165	0.11091744572967835	0.0	0.0	1	12622
166	0.20558235154582113	0.0	0.0	2	12647
167	0.1738305941845765	0.0	0.0	2	12656
168	0.2601087727595176	0.0	0.0	1	12687
169	0.2670856245090338	0.0	0.0	1	12730
170	0.20409765287699191	0.0	0.0	1	12739
171	0.5345491706626838	0.0	0.0	1	12721
172	0.2817562808170932	0.0	0.0	1	12777
173	0.2189039168165116	0.0	0.0	1	12791
174	0.07789375292101573	0.0	0.0	1	12838
175	0.23531257353517923	0.0	0.0	1	12749
176	0.08577666874610106	0.0	0.0	1	12824
177	0.10409993593850095	0.0	0.0	1	12488
178	0.3665987780040733	0.0	0.0	2	12275
179	0.21897810218978103	0.0	0.0	2	12330
180	0.09726837967090865	0.0	0.01621139661181811	1	12337
181	0.3168928252214187	0.0	0.008125457056959454	1	12307
182	0.14625822702527017	0.0	0.008125457056959454	2	12307
183	0.15428339423467316	0.0	0.0	2	12315
184	0.26632233072391254	0.0	0.0	1	12391
185	0.16121231662098987	0.0	0.0	1	12406
186	0.21580345285524566	0.0	0.0	1	12048
187	0.1784651992861392	0.0	0.008498342823149485	1	11767
188	0.16064936163016824	0.0	0.01691045911896508	1	11827
189	0.34675236806495263	0.008457374830852503	0.0	1	11824
190	0.1199040767386091	0.007993605115907274	0.007993605115907274	1	12510
191	0.04769854519437157	0.0	0.0	1	12579
192	0.606633577562436	0.11029701410226109	0.0	1	12693
193	0.37813140066172996	0.0	0.0	3	12694
194	0.2521273242987709	0.0	0.0	3	12692
195	0.1193222496221462	0.0	0.0	3	12571
196	0.14322087842138764	0.0	0.0	1	12568
197	0.17121955015954549	0.0	0.0	1	12849
198	0.3409181003726314	0.0	0.007928327915642592	2	12613
199	0.0619147124835539	0.09287206872533085	0.0	2	12921
200	0.25228166505898936	0.0	0.014840097944646434	4	13477
201	0.21554927902482532	0.0	0.0	4	13454
202	0.31310571045176677	0.0	0.0	4	13414
203	0.14916467780429593	0.0	0.0	4	13408
204	0.18967026553837174	0.021885030639042895	0.007295010213014297	1	13708
205	1.0477385080793922	0.0	0.007378440197742197	3	13553
206	0.17696504940274296	0.0	0.0	3	13562
207	0.06032727546942161	0.0	0.0	3	13261
208	0.3475107652791418	0.0	0.015109163707788774	2	13237
209	0.3681442524417731	0.0075131480090157785	0.0	2	13310
210	0.23027004396064477	0.0	0.006977880120019537	1	14331
211	0.24227740763173833	0.0	0.013459855979541017	2	14859

212	0.22202785440355247	0.0	0.0067281168001076495	2	14863
213	0.1275767138924327	0.0	0.006714563889075404	1	14893
214	0.24808904385141475	0.0067051092932814815	0.0	2	14914
215	0.17790202681237688	0.0	0.0	2	15739
216	0.08823344047393962	0.0	0.006302388605281401	1	15867
217	0.11120215381013696	0.0	0.0058527449373756285	1	17086
218	0.7064043435110048	0.0	0.005838052425710783	1	17129
219	0.18927743339800313	0.0	0.0	1	21133
220	0.120817843866171	0.0	0.0	2	21520
221	0.09178943503602735	0.0	0.0	2	21789
222	0.21381227282446014	0.0	0.0	1	23385
223	0.393301192590713	0.008458090163241139	0.0042290450816205695	1	23646
224	0.15223918467458875	0.004228866240960799	0.0	1	23647
225	0.17824573039296965	0.037307245896202955	0.00414524954402255	1	24124
226	0.4757177132456358	0.0	0.02482005460412013	4	24174
227	0.07489750867234311	0.0	0.0	4	25368
228	0.046598322460391424	0.0	0.0	4	25752
229	0.05350454788657035	0.3057402736375449	0.0	4	26166
230	0.1625463067967037	0.0	0.03024117335752627	4	26454
231	0.15784726398075768	0.0	0.0	4	26608
232	0.21879361726206192	0.0	0.0	4	26509
233	0.17759360663016133	0.007399733609590054	0.0	4	27028
234	0.12799544905070043	0.003555429140297234	0.003555429140297234	2	28126
235	0.21909554619834992	0.0	0.0	2	29211
236	0.5581951689537163	0.0	0.0033225902913911684	1	30097
237	0.2032197631219636	0.0	0.0031753087987806813	2	31493
238	0.1484296146767203	0.0	0.0	2	33686
239	0.161527589489169	0.005768842481756036	0.0	1	34669
240	0.1748920588074548	0.0	0.010930753675465924	2	36594
241	0.16939283256577206	0.0026467630088401885	0.0	2	37782
242	0.1860032550569635	0.005166757084915653	0.007750135627373479	1	38709
243	0.12868138004710225	0.0	0.004855901133852915	3	41187
244	0.14040932889100427	0.0	0.0	3	42020
245	0.10991426687183997	0.006594856012310399	0.0	3	45490
246	0.09434790240477445	0.0	0.004388274530454626	2	45576
247	0.06585828845930346	0.0	0.0	2	51626
248	0.10158685676253196	0.0	0.0070059901215539285	2	57094
249	0.12003978461432932	0.0	0.0	2	58314
250	0.4480609774939486	0.0017167087260304542	0.005150126178091363	2	58251
251	0.08273930753564154	0.004773421588594704	0.0	2	62848
252	0.22332907244971423	0.001469270213484962	0.001469270213484962	1	68061
253	0.12760340275740686	0.0014667057788207685	0.004400117336462306	1	68180
254	0.1398924322268702	0.002716357907317868	0.002716357907317868	1	73628
255	0.07319234176971379	0.0	0.006420380856992436	2	77877
256	0.07505406436840097	0.003816308357715303	0.0	2	78610
257	0.06477095213299636	0.0	0.0	1	78739
258	0.3484852338920968	0.001271843919314222	0.011446595273827995	1	78626
259	0.08144240768816328	0.0012529601182794353	0.005011840473117741	1	79811
260	0.15781760793597113	0.005010082791618131	0.0037575620937135984	1	79839
261	0.12234553875731888	0.0	0.002496847729741202	2	80101
262	0.08265969731963775	0.00850908648878624	0.0	2	82265
263	0.11598965758886501	0.0012082255998840104	0.024164511997680205	3	82766
264	0.06403595679385254	0.0	0.0036246767996520315	3	82766
265	0.08218019215662578	0.009668257900779503	0.0	3	82745

266	0.06775641568561024	0.0	0.0036298079831576908	2	82649
267	0.0738016308950565	0.00362958840467491	0.0	2	82654
268	0.13022403356886197	0.0	0.0036173342658017216	1	82934
269	0.20865936358894105	0.0035566936975387677	0.0071133873950775355	1	84348
270	0.11662288400146074	0.0	0.011780089293076841	2	84889
271	0.16793982156393958	0.00699749256516415	0.0	2	85745
272	0.06328520532533283	0.0	0.002343896493530846	2	85328
273	0.10436087756944688	0.003517782389981356	0.0	2	85281
274	0.111333778668448	0.003515803536898358	0.00468773804919781	1	85329
275	0.35109820251717583	0.011664392110205177	0.01049795289918466	1	85731
276	0.11063621647431493	0.0023291835047224195	0.006987550514167258	2	85867
277	0.05910576455044851	3.7792921215492665	0.0	2	86286
278	0.3849888615982179	0.0034272005483520877	0.31416005026560806	7	87535
279	0.04845343399628148	0.0011268240464251506	0.005634120232125754	7	88745
280	0.05052716677333513	0.0	0.0	7	89061
281	0.04228282760846102	0.006676235938178055	0.0	7	89871
282	0.12649316936885407	0.0021998812064148534	0.0	7	90914
283	0.0691449079714201	0.016463073326528598	0.0	7	91113
284	0.09220231822971549	0.01097646645591851	0.0021952932911837022	7	91104
285	0.3231530978880028	0.003286302690386469	0.018622381912189994	1	91288
286	0.09440175631174534	0.0	0.0032930845225027446	1	91100
287	0.15301884317754558	0.008743933895859748	0.005464958684912342	1	91492
288	0.11353959693443089	0.004366907574401188	0.003275180680800891	1	91598
289	0.15261268619822455	0.0	0.0032242116802441803	1	93046
290	0.1534153694306466	0.001072834751263263	0.0032185042537897883	1	93211
291	0.0945138978390686	0.0	0.0032220646990591575	2	93108
292	0.08602335534097508	0.004301167767048753	0.0	2	92998
293	0.1999226106023475	0.0010748527451739111	0.0	1	93036
294	0.8581389112362564	0.0010726736390453205	0.006436041834271923	1	93225
295	0.10932710240305259	0.0	0.0075028403609938045	3	93298
296	0.13273673167911967	0.0	0.0	3	93418
297	0.0983936172488289	0.00855596671728947	0.0	3	93502
298	0.07834999152973064	0.003176351007962053	0.0010587836693206844	1	94448
299	0.15548645046645934	0.0010577309555541451	0.012692771466649743	2	94542
300	0.09938571171799833	0.002114589611021241	0.0010572948055106205	2	94581
301	0.10216352549299221	0.005321016952760011	0.0021284067811040046	1	93967
302	0.0872294026913462	0.002127546407106005	0.0010637732035530024	1	94005
303	0.545955687480123	0.0031803243930880946	0.007420756917205554	1	94330
304	0.06886395660511288	0.0	0.003178336458697518	2	94389
305	0.11085069994299107	0.00527860475919005	0.0	2	94722
306	0.11855113576222029	0.00423396913436501	0.002116984567182505	1	94474
307	0.40408741828336897	0.0031734614001311698	0.0031734614001311698	1	94534
308	0.2866602494261506	0.003173360694754435	0.0010577868982514782	1	94537
309	0.11209932423143223	0.0021150815892723063	0.0031726223839084592	1	94559
310	0.1769367689438888	0.0	0.004238006441769792	1	94384
311	0.1133630690667147	0.01059467935202941	0.005297339676014705	1	94387
312	0.14951170114625636	0.22479773505678263	0.009543300073165301	1	94307
313	0.13147431479616178	0.0	0.02756719503790489	5	94315
314	0.06353509254945149	0.0021178364183150494	0.0021178364183150494	5	94436
315	0.08366516987206642	0.0	0.0	5	94424
316	0.06890995059686619	0.0	0.0	5	94326
317	0.05620241352251278	0.0021208457933023688	0.0	5	94302
318	0.14639269309514466	0.0042432664665259315	0.0010608166166314829	1	94267
319	0.10510446747069815	0.002123322575165619	0.002123322575165619	1	94192

320	0.11358569881743487	0.0	0.009553937283709476	3	94202
321	0.05839447057449542	0.0	0.0021234352936180152	3	94187
322	0.0775234959910795	0.012743588382095258	0.0021239313970158767	3	94165
323	0.055262710423397386	0.0	0.006376466587315083	3	94096
324	0.06061830672863205	0.0	0.0021269581308291947	3	94031
325	0.28625852656670675	0.0010641580913260474	0.0042566323653041895	3	93971
326	0.14259870171331276	0.0021283388315419816	0.004256677663083963	1	93970
327	0.20995193486161287	0.0021314917244833797	0.004262983448966759	1	93831
328	0.23547713421131142	0.004262029578485275	0.0031965221838639564	1	93852
329	0.11291009799744355	0.0010651896037494673	0.0021303792074989347	1	93880
330	0.23981070941336968	0.001065825375170532	0.002131650750341064	1	93824
331	0.28483038190740345	0.002133560913164071	0.0074674631960742486	1	93740
332	0.11521474748767842	0.001066803217478504	0.00533401608739252	1	93738
333	0.1846061912434774	0.0010670878106559388	0.0010670878106559388	1	93713
334	0.13231888852133644	0.0	0.005335439053279694	2	93713
335	0.09082360986451254	0.006411078343377357	0.0	2	93588
336	0.08762275199555475	0.007479991024010771	0.007479991024010771	1	93583
337	0.1518635367092669	0.0010694615261215977	0.004277846104486391	2	93505
338	0.10068767540007284	0.007498018380856487	0.0	2	93358
339	0.07712412699772912	0.02463687390205236	0.0	1	93356
340	0.06589465497126562	0.0	0.003240720736291751	3	92572
341	0.0659616341183849	0.0010813382642358182	0.0	3	92478
342	0.6086466816842835	0.011913013342574942	0.0	3	92336
343	0.07689641727678379	0.0	0.002166096261317853	2	92332
344	0.086687038120625	0.014086643694601565	0.0	2	92286
345	0.08995437254115683	0.060692106774756414	0.0032513628629333795	1	92269
346	0.08453451826162349	0.004335103500596077	0.01192153462663921	4	92270
347	0.05311422810935027	0.004335855355865328	0.0	4	92254
348	0.04898599006858035	0.02394870622557504	0.0	4	91863
349	0.09162503545016253	10.474704945570366	0.0	4	91678
350	0.0805606135849473	0.006621420294653203	0.04414280196435469	5	90615
351	0.05079337036096419	0.005521018517496108	0.007729425924494551	5	90563
352	0.0342514943595523	0.007734208403769874	0.0	5	90507
353	0.07522956079212302	0.02212634140944795	0.0	5	90390
354	0.2712256285987417	0.015562126231075344	0.0	5	89962
355	0.10810931300432437	0.003343587000133743	0.008916232000356648	1	89724
356	0.9522110474321521	0.005575006132506746	0.0078050085855094434	1	89686
357	0.04683214022880846	0.0033451528734863185	0.0011150509578287727	2	89682
358	0.05358039850421387	0.021208907741251323	0.0	2	89585
359	0.06720129026477308	0.0	0.010080193539715962	3	89284
360	0.07813384667648057	0.0	0.0	3	88310
361	0.6833946490198982	0.004555964326799321	0.0	3	87797
362	0.06378568011481422	1.1948424721507165	0.001139030002050254	1	87794
363	2.186267223143331	0.0034303356011663143	1.9781601966725744	7	87455
364	0.21049019047074302	0.0022879368529428587	0.09838128467654292	7	87415
365	0.06299537270353232	0.0	0.0011453704127914969	7	87308
366	0.04621552610599531	0.0011553881526498826	0.0	7	86551
367	0.03141873021783653	0.0	0.0	7	85936
368	0.02366359828675548	0.0023663598286755485	0.0011831799143377742	7	84518
369	0.036957191253464736	0.013550970126270405	0.0024638127502309825	7	81175
370	0.06546938985096086	0.0	0.015404562317873145	2	77899
371	0.061901937014779085	0.0	0.0012896236878078976	2	77542
372	0.05804728919159475	0.0012899397598132168	0.0012899397598132168	1	77523
373	0.11278540609303483	0.0	0.0	2	76251

374	0.25261163592347974	0.0	0.0	2	76006
375	0.1999258553119373	0.0013240122868340217	0.0013240122868340217	1	75528
376	0.06886505098662428	0.0013243279035889286	0.0026486558071778573	1	75510
377	0.48322293408621997	0.0013573677923770225	0.002714735584754045	1	73672
378	0.029915285351028678	0.004079357093322092	0.006798928488870154	1	73541
379	0.11119500308875009	0.0	0.03157388976594139	2	72845
380	0.04541763580561252	0.0	0.0027525839882189406	2	72659
381	0.057891109579600274	0.0027567195037904893	0.009648518263266712	1	72550
382	0.10389106675347341	0.004155642670138937	0.013852142233796457	1	72191
383	0.0766668060608595	0.03484854820948159	0.04042431592299865	1	71739
384	0.9302981182606245	0.0	0.8302205934174361	3	70945
385	0.0951831554658206	0.001442169022209403	0.027401211421978655	3	69340
386	0.0672593285764417	0.005848637267516669	0.02047023043630834	3	68392
387	0.4741597829004265	0.0014910684996868756	0.37724033042077953	2	67066
388	0.15995030670083082	0.012423324792297538	0.0031058311980743845	2	64395
389	0.3347956592011083	0.0	0.2836692284856681	2	60634
390	0.11710794297352342	0.006788866259334691	0.0050916496945010185	2	58920
391	0.18485237483953787	0.0034231921266581087	0.14035087719298245	1	58425
392	0.17858737387266718	0.016072863648540048	0.15894276274667382	1	55995
393	0.2775837676176149	0.03044467128709325	0.1916223428069987	1	55839
394	0.1851427698885326	0.0	0.16796457474423576	2	52392
395	0.14772749074305008	0.0709859371102968	0.005755616522456497	2	52123
396	0.4196630042809844	0.0	0.34585292815116303	2	47419
397	0.14914849766785987	0.0488122356003905	0.0	2	36876
398	0.3931728131667174	0.003047851264858275	0.3626943005181347	2	32810
399	0.03684228154201694	0.10382824798204776	0.0	2	29857
400	0.027060853093393768	0.0	0.006765213273348442	2	29563
401	0.026154047338825683	0.0	0.0	2	22941
402	0.12234042553191489	0.0	0.0425531914893617	1	18800

Supplementary Table S4. Misincorporation distribution in 376 nt *mboIIM2A356* mRNA pool.

base No	A	T	G	C
0	0.0	0.0	0.0	0.0
1	0.0	0.0	0.0	0.0
2	0.12366884232222602	0.07901064926142219	0.0	0.06870491240123669
3	0.0	0.19210318685465336	0.19210318685465336	0.3807759596583307
4	0.0	0.06162484165839296	0.07189564860145846	0.13009688794549623
5	0.36261631089217294	0.12999452654625068	0.0992063492063492	0.0
6	0.0	0.10940919037199125	0.06838074398249452	0.18462800875273525
7	0.2597225070056729	0.11277424646298954	0.07518283097532635	0.0
8	0.4985657697035924	0.14342302964075945	0.08537085097664254	0.0
9	0.0	0.061412487205731836	0.06482429205049471	0.18764926646195837
10	0.040919320739275726	0.0	0.027279547159517154	0.04773920752915502
11	0.0	0.13710998896431797	0.0702270675183092	0.3444470454469451
12	0.016698951305857992	0.0	0.02337853182820119	0.02337853182820119
13	0.04659522066165213	0.0	0.016641150236304334	0.0299540704253478
14	0.026573658860654374	0.0	0.03653878093339977	0.029895366218236175
15	0.03305348053149997	0.0	0.01983208831889998	0.02313743637204998
16	0.046229031831990494	0.0	0.02641658961828028	0.036322810725135386
17	0.06597611664577423	0.0	0.032988058322887114	0.02639044665830969
18	0.0	0.039555658107261756	0.039555658107261756	0.09229653558361077
19	0.0	0.11202635914332784	0.05930807248764415	0.18780889621087316
20	0.0	0.20079660291648835	0.08887718489746206	0.20408835050528326
21	0.22378727045349833	0.30935299150924767	0.0	0.08885671032712433
22	0.0	0.20073052749350093	0.08226660962848399	0.15137056171641053
23	0.27297243965006907	0.11510886009340263	0.062487666907847135	0.0
24	0.0	0.02300966405890474	0.08546446650450332	0.05588061271448294
25	0.4286508949314486	0.22577795229213704	0.0	0.14397434638918882
26	0.3812847356856663	0.06785575804575417	0.05816207832493214	0.0
27	0.6968416298351454	0.20969771268187243	0.1419492208923444	0.0
28	0.7440905737836364	0.064145739119279	0.0	0.0192437217357837
29	0.47777849034823316	0.0	0.3847880459180401	0.2469056627974091
30	0.0	0.04157339302846178	0.3869523504956828	0.12791813239526703
31	0.0	0.08951120488475432	2.2345832933729737	0.27492727214603113
32	0.09588647041902389	0.0	0.06392431361268258	0.051139450890146064
33	0.0	0.07661367554108409	0.14365064163953264	0.12768945923514013
34	0.07659411501882939	0.0	0.07021127210059361	0.03829705750941469
35	0.8466840829687451	0.17940889490415787	0.0	0.09757325863208587
36	0.38034667664297295	0.102880658436214	0.04988153136301285	0.0
37	0.0	0.04973887092762994	0.4258890823178314	0.1305645361850286
38	0.0	0.040401529042483765	0.08080305808496753	0.10877334742207168
39	1.023541453428864	0.2543345429732329	0.0	0.10545578611085266
40	0.0	0.08990296679790433	0.3255107418544812	0.2170071612363208
41	0.0	0.07736584762022654	0.19186730209816177	0.15782632914526212
42	0.35236299570364416	0.1390906561988069	0.0	0.05254535900843817
43	1.338319836805341	0.0	0.3368980651542313	0.4636211905792174
44	0.0	0.04633634004695416	0.2996416656369702	0.0864945014209811
45	0.2277623884272084	0.08002462296091105	0.043090181594336724	0.0
46	0.4632612363859488	0.10124252185918084	0.07669888019634913	0.0
47	0.2544991819669151	0.060595043325455976	0.039386778161546385	0.0
48	0.0	0.021189647343726352	0.19676101104888752	0.17859845618283637
49	0.0	0.0602627455706882	0.0903941183560323	0.17777509943353018

50	0.036103255310187134	0.0	0.018051627655093567	0.015043023045911307
51	0.0	0.02700756211739287	0.04201176329372224	0.08402352658744448
52	0.0	0.16456226437675783	0.05385674106875711	0.1974747172521094
53	0.04486987735566856	0.0	0.05384385282680228	0.06580915345498055
54	0.0	0.13955283707948574	0.23456753466551855	0.18409097657293863
55	0.2908788697278205	0.6173755602386394	0.0	0.10982161408091182
56	0.24658016790935242	0.19961251687899959	0.061645041977338104	0.0
57	0.12265280495283708	0.30955231726192217	0.0	0.06716701223607745
58	0.5640635959784897	0.0	0.17827916764086976	0.1899696048632219
59	0.0	0.0496335873405156	0.10510642025050364	0.10218679746576743
60	0.33844897006477215	0.07002392484098734	0.04084728949057595	0.0
61	0.0	0.07885283724190298	0.06425045997488392	0.10805759177594113
62	0.08757078638566174	0.0	0.0321092883414093	0.04086636697997548
63	0.22013671648708147	0.05503417912177037	0.026068821689259645	0.0
64	0.10713768640509627	0.0	0.04053858404517157	0.03474735775300419
65	0.09842804620328285	0.0	0.043424138030860086	0.07237356338476682
66	0.0	0.06657789613848203	0.04920974931974759	0.18526023273316738
67	0.05785530388498365	0.0	0.037605947525239374	0.04049871271948856
68	0.06193594054149708	0.0	0.029493305019760514	0.03539196602371262
69	0.0	0.047200424803823235	0.04130037170334533	0.09145082305740752
70	0.06491973559962229	0.0	0.020656279508970726	0.03541076487252125
71	0.062098944317946596	0.0	0.026613833279119967	0.014785462932844428
72	0.0	0.03844902546508533	0.18928750998195853	0.09168613764751117
73	0.20927901904144314	0.11790367269940459	0.020633142722395803	0.0
74	0.062242508669492276	0.0	0.05631465070096921	0.04149500577966152
75	0.062235130249236874	0.0	0.0355629315709925	0.02963577630916042
76	0.22795902658535144	0.06809165729172835	0.041447095742791165	0.0
77	0.32556900583064496	0.22197886761180335	0.0	0.13910675703673012
78	0.29329857202109383	0.07702790780351958	0.020738282870178346	0.0
79	0.3554712956928728	0.10071686711298064	0.041471651164168497	0.0
80	0.0	0.06562658473286996	0.06562658473286996	0.07457566446917042
81	0.24705322062150256	0.0684605310155971	0.03571853792118109	0.0
82	0.2828520919269299	0.09133765468473777	0.01473187978786093	0.0
83	0.06477255998822318	0.0	0.023553658177535696	0.04121890181068747
84	0.0824426581868504	0.0	0.04711009039248594	0.04711009039248594
85	0.0	0.03528685270679566	0.34992795600905696	0.39991766401035084
86	0.03798503973819542	0.0	0.01753155680224404	0.08181393174380552
87	0.07289904939639587	0.0	0.02915961975855835	0.1253863649618009
88	0.058326042578011085	0.0	0.020414114902303878	0.037911927675707204
89	0.04973086824245261	0.0	0.020477416335127546	0.029253451907325062
90	0.0	0.09467455621301775	0.04142011834319527	0.10059171597633135
91	0.0	0.04195259356926673	0.032962752090138145	0.06292889035390009
92	0.050957705104763044	0.0	0.026977608584874555	0.026977608584874555
93	0.0	0.025421035907213223	0.038131553860819824	0.03177629488401652
94	0.05081946385465633	0.0	0.022233515436412145	0.03811459789099225
95	0.057747834456207896	0.0	0.03529034327879371	0.025665704202759064
96	0.0	0.025462878760321557	0.33829253210141497	0.13458950201884254
97	0.0	0.04204892966360856	0.06498470948012232	0.07262996941896024
98	0.12923825452333892	0.09502812832598449	0.0	0.03421012619735442
99	0.44208322022724633	0.1512389963935316	0.0	0.07755845968899057
100	0.0	0.05658508982883011	0.1084547555052577	0.12731645211486775
101	0.12999071494893222	0.07428040854224698	0.02321262766945218	0.0
102	0.06225035015821964	0.0	0.01556258753955491	0.020750116719406547
103	0.0	0.021511158913686476	0.04302231782737295	0.07528905619790266

104	0.04294149221685453	0.0	0.026838432635534086	0.032206119162640906
105	0.09483960948396095	0.12831241283124128	0.0	0.05020920502092051
106	0.20478980601854485	0.08532908584106036	0.05119745150463621	0.0
107	0.271985494106981	0.14732547597461468	0.05099728014505893	0.0
108	0.0	0.08164217401446233	0.052484254723582924	0.0583158385817588
109	0.0	0.011963153487259242	0.04785261394903697	0.07177892092355545
110	0.0	0.05638391179050244	0.20047613081067536	0.15035709810800651
111	0.5318816094111758	0.25029722795820036	0.0	0.0688317376885051
112	0.0	0.09441681878265248	0.07553345502612199	0.19512809215081514
113	0.04385140637724738	0.0	0.06264486625321056	0.08770281275449476
114	0.09995626913225464	0.14993440369838196	0.0	0.07496720184919098
115	0.16856036958421777	0.22474715944562368	0.0	0.0998876264202772
116	0.35867102944877927	0.0	0.15101938082053865	0.25169896803423103
117	0.03778575477045154	0.0	0.031488128975376284	0.01889287738522577
118	0.0	0.03446136880556896	0.06892273761113792	0.1516300227445034
119	0.062051847766133476	0.0	0.020683949255377827	0.020683949255377827
120	0.2663862600771118	0.042060988433228176	0.056081317910970915	0.0
121	0.0	0.02791152048007815	0.4396064475612309	0.1256018421603517
122	0.17672648178357803	0.11555193039695486	0.0	0.10195758564437193
123	0.07475365273530411	0.020387359836901122	0.027183146449201494	0.0
124	0.048641512056146204	0.0	0.03474393718296157	0.02779514974636926
125	0.0	0.056211354693648116	0.042158516020236084	0.10539629005059022
126	0.0	0.06293706293706294	0.09090909090909091	0.13986013986013987
127	0.0	0.14688396167028048	0.08393369238301741	0.09092816674826887
128	0.07700385019250962	0.0	0.028001400070003502	0.014000700035001751
129	0.0	0.04264998578333807	0.05686664771111743	0.05686664771111743
130	0.3473699135119807	0.20558627534382531	0.0	0.09924854671770877
131	0.2566844919786096	0.1497326203208556	0.07130124777183601	0.0
132	0.30709898585916295	0.14997857448935867	0.0428510212826739	0.0
133	0.0	0.06421691045308599	0.0784873349982162	0.08562254727078131
134	0.04983270449206237	0.0	0.007118957784580338	0.02135687335374101
135	0.0	0.02848799943024001	0.09970799800584004	0.17092799658144006
136	0.24154589371980675	0.14919011082693948	0.0	0.12077294685990338
137	0.2264044148860903	0.02830055186076129	0.049525965756332245	0.0
138	0.0	0.04311893639956881	0.07905138339920949	0.06467840459935321
139	0.0	0.028741826543076814	0.09341093626499965	0.10778184953653806
140	0.0999714367323622	0.0	0.03570408454727221	0.057126535275635534
141	0.0	0.02127056154282473	0.5601247872943846	0.14889393079977312
142	0.0	0.02107037505267594	0.24582104228121926	0.09130495856159573
143	0.0	0.035280835450183456	0.035280835450183456	0.04939316963025684
144	0.1545595054095827	0.0702543206407194	0.0351271603203597	0.0
145	0.0	0.0644791517409371	0.07164350193437455	0.07880785212781201
146	0.10685282803818208	0.04986465308448497	0.03561760934606069	0.0
147	0.0	0.037069988137603795	0.10379596678529061	0.1631079478054567
148	0.49355432780847147	0.10313075506445672	0.0	0.04419889502762431
149	0.24311183144246357	0.0	0.15470752909974952	0.1105053779283925
150	0.1418651534383633	0.014933174046143508	0.014933174046143508	0.0
151	0.0	0.03155071777882947	0.10253983278119577	0.07887679444707367
152	0.15617679212868968	0.046853037638606904	0.0	0.031235358425737936
153	0.11684973124561812	0.05452987458128846	0.015579964166082417	0.0
154	0.0	0.015558148580318941	0.14780241151302995	0.07001166861143523
155	0.0	0.015561780267662622	0.02334267040149393	0.1478369125427949
156	0.0	0.05428039702233251	0.05428039702233251	0.18610421836228289
157	0.02325761686952477	0.0	0.031010155826033024	0.02325761686952477

158	0.06105006105006105	0.0	0.022893772893772892	0.022893772893772892
159	0.06037735849056604	0.09056603773584905	0.0	0.022641509433962263
160	0.21092278719397364	0.0903954802259887	0.0	0.0903954802259887
161	0.21729357110744793	0.05994305409860632	0.05994305409860632	0.0
162	0.07019733250136495	0.015599407222525544	0.0	0.046798221667576634
163	0.0	0.06296733569460843	0.09445100354191263	0.15741833923652104
164	0.0550357732526142	0.0	0.0550357732526142	0.031449013287208116
165	0.0	0.0316906987799081	0.0316906987799081	0.04753604816986214
166	0.11860520281489681	0.0	0.04744208112595873	0.039535067604965606
167	0.08691529709228825	0.0	0.05530973451327434	0.03160556257901391
168	0.1576416804603137	0.07882084023015686	0.0	0.023646252069047056
169	0.0	0.05498821681068342	0.09426551453260015	0.1178318931657502
170	0.0784990972603815	0.0	0.0784990972603815	0.047099458356228904
171	0.0	0.05502712050939392	0.27513560254696956	0.20438644760632027
172	0.18001095718869844	0.0704390702042733	0.0	0.03130625342412147
173	0.1329059494957392	0.06254397623328903	0.023453991087483386	0.0
174	0.031157501168406293	0.0	0.015578750584203147	0.031157501168406293
175	0.0	0.047062514707035846	0.03137500980469056	0.1568750490234528
176	0.015595757953836557	0.0	0.015595757953836557	0.05458515283842794
177	0.05605381165919283	0.016015374759769378	0.0	0.032030749519538756
178	0.0	0.08961303462321792	0.13034623217922606	0.14663951120162932
179	0.0	0.016220600162206	0.05677210056772101	0.145985401459854
180	0.048634189835454325	0.0	0.008105698305909055	0.024317094917727163
181	0.0	0.04875274234175672	0.18688551231006745	0.07312911351263508
182	0.08125457056959454	0.0	0.008125457056959454	0.04062728528479727
183	0.08932196508323183	0.0	0.0243605359317905	0.04060089321965083
184	0.0	0.01614074731660076	0.14526672584940684	0.09684448389960455
185	0.08866677414154442	0.0	0.024181847493148476	0.04836369498629695
186	0.1411022576361222	0.033200531208499334	0.033200531208499334	0.0
187	0.09348177105464434	0.0	0.025495028469448455	0.05099005693889691
188	0.07609706603534286	0.05073137735689524	0.0	0.01691045911896508
189	0.1860622462787551	0.0	0.07611637347767253	0.08457374830852503
190	0.07194244604316546	0.023980815347721823	0.01598721023181455	0.0
191	0.007949757532395262	0.0	0.023849272597185785	0.015899515064790523
192	0.5199716379106595	0.06302686520129205	0.0	0.02363507445048452
193	0.0	0.047266425082716244	0.16543248778950684	0.1575547502757208
194	0.0	0.039394894421682945	0.06303183107469272	0.13394264103372203
195	0.0	0.007954816641476414	0.04772889984885849	0.04772889984885849
196	0.039783577339274345	0.0	0.039783577339274345	0.05569700827498409
197	0.09339248190520663	0.07004436142890498	0.0	0.0
198	0.1664948862284944	0.0	0.09513993498771109	0.05549829540949814
199	0.03095735624177695	0.0	0.015478678120888476	0.0
200	0.0	0.02226014691696965	0.15582102841878756	0.05194034280626253
201	0.0	0.03716366879738368	0.059461870075813876	0.11892374015162775
202	0.0	0.03727448933949605	0.0745489786789921	0.2012822424332787
203	0.0	0.0	0.06712410501193317	0.08204057279236276
204	0.08024511234315729	0.07295010213014298	0.0	0.02918004085205719
205	0.5091123736442116	0.0	0.25086696672323466	0.28038072751420345
206	0.058988349800914316	0.0	0.05161480607580003	0.06636189352602861
207	0.015081818867355403	0.0	0.022622728301033106	0.022622728301033106
208	0.2266374556168316	0.09065498224673264	0.0	0.015109163707788774
209	0.18782870022539444	0.1277235161532682	0.0	0.05259203606311044
210	0.15351336264042983	0.04884516084013677	0.020933640360058615	0.0
211	0.0	0.013459855979541017	0.15478834376472173	0.06056935190793458

212	0.0	0.04709681760075355	0.08746551840139945	0.08073740160129181
213	0.026858255556301617	0.060431075001678644	0.0	0.033572819445377024
214	0.0	0.04023065575968888	0.11398685798578517	0.09387153010594072
215	0.0	0.025414575258910985	0.06353643814727747	0.08895101340618844
216	0.04411672023696981	0.0	0.025209554421125605	0.012604777210562803
217	0.07023293924850754	0.023410979749502514	0.0	0.011705489874751257
218	0.3619592503940685	0.0	0.1459513106427696	0.19265573004845585
219	0.08990678086405149	0.07571097335920125	0.0	0.02365967917475039
220	0.0	0.046468401486988845	0.041821561338289966	0.032527881040892194
221	0.0	0.0	0.050484189269815044	0.04130524576621231
222	0.13683985460765447	0.047038700021381226	0.029933718195424414	0.0
223	0.2368265245707519	0.1141842172037554	0.0	0.03806140573458513
224	0.0	0.025373197445764793	0.050746394891529586	0.07611959233729437
225	0.11192173768860886	0.05388824407229315	0.0	0.0082904990880451
226	0.20683378836766775	0.0	0.09514354264912717	0.14892032762472077
227	0.015767896562598548	0.0	0.04730368968779565	0.011825922421948912
228	0.015532774153463809	0.0	0.015532774153463809	0.015532774153463809
229	0.019108767102346557	0.0	0.007643506840938622	0.026752273943285176
230	0.0	0.04158161336659862	0.034021320027217056	0.056702200045361764
231	0.0	0.03006614552014432	0.08644016837041492	0.04134095009019844
232	0.0	0.0188615187294881	0.11316911237692859	0.08676298615564526
233	0.0	0.025899067633565195	0.07769720290069557	0.07399733609590055
234	0.07821944108653915	0.03199886226267511	0.014221716561188936	0.0
235	0.13008798055527027	0.06846735818698435	0.02054020745609531	0.0
236	0.4419045087550254	0.09303252815895272	0.0	0.01993554174834701
237	0.0	0.031753087987806815	0.09208395516463977	0.07620741117073636
238	0.0	0.02968592293534406	0.047497476696550495	0.06827762275129134
239	0.08653263722634054	0.04326631861317027	0.031728633649658194	0.0
240	0.07651527572826146	0.04918839153959665	0.0	0.03825763786413073
241	0.08469641628288603	0.06087554920332434	0.0	0.023820867079561697
242	0.12400217003797566	0.031000542509493915	0.02066702833966261	0.0
243	0.0	0.004855901133852915	0.09226212154320539	0.02670745623619103
244	0.0	0.016658733936220846	0.09281294621608757	0.02855782960495002
245	0.0	0.017586282699494395	0.039569136073862386	0.05275884809848319
246	0.0526592943654555	0.0	0.02413550991750044	0.013164823591363875
247	0.030992135745554563	0.0	0.023244101809165925	0.011622050904582962
248	0.021017970364661787	0.06480540862437384	0.0	0.008757487651942411
249	0.036011935384298796	0.0703090167026786	0.0	0.013718832527351923
250	0.16823745515098454	0.0	0.15622049406877134	0.11845290209610135
251	0.02864052953156823	0.0	0.03341395112016293	0.020684826883910386
252	0.0	0.02938540426969924	0.02497759362924435	0.16749680433728567
253	0.0704018773833969	0.0	0.03666764447051921	0.016133763567028454
254	0.08963981094148965	0.03259629488781442	0.014939968490248274	0.0
255	0.0	0.015408914056781848	0.015408914056781848	0.03595413279915764
256	0.0	0.02035364457448162	0.017809439002671415	0.03689098079124793
257	0.03937057874750759	0.0	0.012700186692744383	0.012700186692744383
258	0.0	0.17678630478467683	0.049601912853254645	0.1106504209803373
259	0.0463595243763391	0.021300322010750397	0.008770720827956047	0.0
260	0.043838224426658655	0.0	0.018787810468567992	0.09143401094703091
261	0.06616646483814186	0.042446411405600425	0.011235814783835408	0.0
262	0.037683097307481914	0.03525192973925728	0.00972467027289856	0.0
263	0.010874030398956094	0.0	0.026580963197448227	0.05437015199478047
264	0.018123383998260155	0.0	0.021748060797912187	0.020539835198028177
265	0.04954982174149496	0.0	0.013293854613571817	0.019336515801559005

266	0.0	0.02782852787087563	0.022988783893332043	0.013309295938244866
267	0.0	0.02177753042804946	0.016938079221816248	0.03508602124519079
268	0.0602889044300287	0.0	0.04340801118962066	0.022909783683410904
269	0.06046379285815905	0.11499976288708684	0.0	0.02608242044861763
270	0.04947637503092273	0.02002615179823063	0.03534026787923052	0.0
271	0.11429237856434776	0.032654965304099365	0.020992477695492447	0.0
272	0.0	0.018751171948246766	0.010547534220888806	0.031642602662666414
273	0.0	0.034005229769819775	0.03517782389981356	0.03517782389981356
274	0.0421896424427803	0.0	0.0421896424427803	0.0222667557336896
275	0.2192905716718573	0.11431104268001073	0.0	0.006998635266123106
276	0.030279385561391457	0.0	0.04076071133264234	0.032608569066113875
277	0.026655540875692465	0.0	0.01622511183737802	0.01622511183737802
278	0.0	0.04341120694579311	0.01485120237619238	0.012566402010624322
279	0.0	0.012395064510676656	0.007887768324976055	0.022536480928503015
280	0.0	0.013473911139556035	0.0123510852112597	0.0247021704225194
281	0.0	0.010014353907267083	0.014465177866052453	0.01780329583514148
282	0.0	0.010999406032074268	0.07479596101810503	0.04069780231867479
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284	0.0	0.006585879873551106	0.07683526519142958	0.006585879873551106
285	0.24318639908859874	0.0427219349750241	0.0	0.018622381912189994
286	0.0	0.020856201975850714	0.042810098792535674	0.027442371020856202
287	0.09946224806540462	0.039347702531368864	0.0	0.008743933895859748
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290	0.06222441557326924	0.07724410209095493	0.0	0.010728347512632628
291	0.0	0.02362847445976715	0.03544271168965073	0.03222064699059157
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314	0.021178364183150493	0.0	0.028590791647253165	0.011648100300732772
315	0.01482673896467	0.0	0.046598322460391424	0.022240108447004997
316	0.019082755549901406	0.0	0.03392489875538028	0.015902296291584506
317	0.018027189243070136	0.0	0.024389726622977243	0.013785497656465398
318	0.05198001421494266	0.08380451271388716	0.0	0.009547349549683346
319	0.0	0.019109903176490573	0.0552063869543061	0.028664854764735858

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338	0.0	0.035347800938323445	0.028920928040446454	0.035347800938323445
339	0.05677192681777282	0.014996358027336218	0.004284673722096063	0.0
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347	0.019511349101393977	0.0	0.02059531294036031	0.013007566067595986
348	0.013062930668495478	0.0	0.017417240891327304	0.01850581844703526
349	0.06326490542987413	0.0	0.015270839241693753	0.013089290778594647
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353	0.0	0.009956853634251576	0.03429582918464432	0.030976877973227124
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357	0.02676122298789055	0.013380611493945274	0.005575254789143864	0.0
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359	0.0	0.0022400430088257693	0.024640473097083462	0.030240580619147885
360	0.0	0.007926622126599479	0.0498244819386253	0.020382742611255805
361	0.0	0.25741198446416164	0.18679453739877216	0.23918812715696436
362	0.029614780053306602	0.02619769004715584	0.006834180012301523	0.0
363	0.0160082328054428	0.0	0.10977073923732206	0.08232805442799154
364	0.013727621117657152	0.0	0.07550191614711434	0.02287936852942859
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366	0.00462155261059953	0.0	0.024263151205647537	0.01733082228974824
367	0.003490970024204059	0.0	0.019782163470489667	0.008145596723142804
368	0.00591589957168887	0.0	0.010648619229039967	0.00591589957168887
369	0.013550970126270405	0.0	0.004927625500461965	0.016014782876501387
370	0.0	0.017971989370852003	0.023106843476809715	0.008985994685426001
371	0.0	0.025792473756157955	0.025792473756157955	0.009027365814655283
372	0.014189337357945383	0.0	0.021928975916824685	0.02063903615701147
373	0.06688436872959043	0.041966662732292034	0.0	0.003934374631152379

374	0.18682735573507353	0.05657448096202931	0.0	0.009209799226376865
375	0.0	0.05296049147336088	0.06884863891536913	0.07679271263637327
376	0.055621771950735	0.007945967421533572	0.0026486558071778573	0.0
377	0.0	0.16424150287761974	0.12487783689868606	0.19138885872516015
378	0.010878285582192245	0.010878285582192245	0.0013597856977740307	0.0
379	0.020591667238657425	0.0	0.03981055666140435	0.01921888942274693
380	0.013762919941094702	0.0	0.019268087917532584	0.009634043958766292
381	0.0	0.011026878015161957	0.02756719503790489	0.009648518263266712
382	0.026319070244213268	0.0	0.04155642670138937	0.02216342757407433
383	0.0153333612121719	0.01951518699730969	0.0013939419283792638	0.0
384	0.016914511241102263	0.0	0.053562618930157166	0.02960039467192896
385	0.007210845111047014	0.0	0.0475915777329103	0.012979521199884625
386	0.01023511521815417	0.0	0.019008071119429173	0.017545911802550006
387	0.03280350699311126	0.052187397489040645	0.0	0.011928547997495004
388	0.09472785154126873	0.051246214768227355	0.0	0.010870409193260346
389	0.0	0.013193917603984561	0.029686314608965265	0.008246198502490351
390	0.0	0.013577732518669382	0.07807196198234895	0.020366598778004074
391	0.02396234488660676	0.0	0.01198117244330338	0.00855798031664527
392	0.0	0.0053576212161800165	0.010715242432360033	0.003571747477453344
393	0.05730761654041082	0.02149035620265406	0.0	0.007163452067551352
394	0.0	0.007634753397465261	0.0057260650480989465	0.0038173766987326307
395	0.0	0.047963471020470806	0.04412639333883314	0.04988200986128965
396	0.05272148294987242	0.014762015225964275	0.00632657795398469	0.0
397	0.14372491593448314	0.005423581733376722	0.0	0.0
398	0.0	0.009143553794574825	0.009143553794574825	0.0121914050594331
399	0.0	0.006698596644003081	0.006698596644003081	0.023445088254010784
400	0.013530426546696884	0.0	0.003382606636674221	0.003382606636674221
401	0.0	0.0	0.013077023669412841	0.013077023669412841
402	0.06382978723404255	0.010638297872340425	0.005319148936170213	0.0
403	0.0	0.0	0.0188821752265861	0.0062940584088620345

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