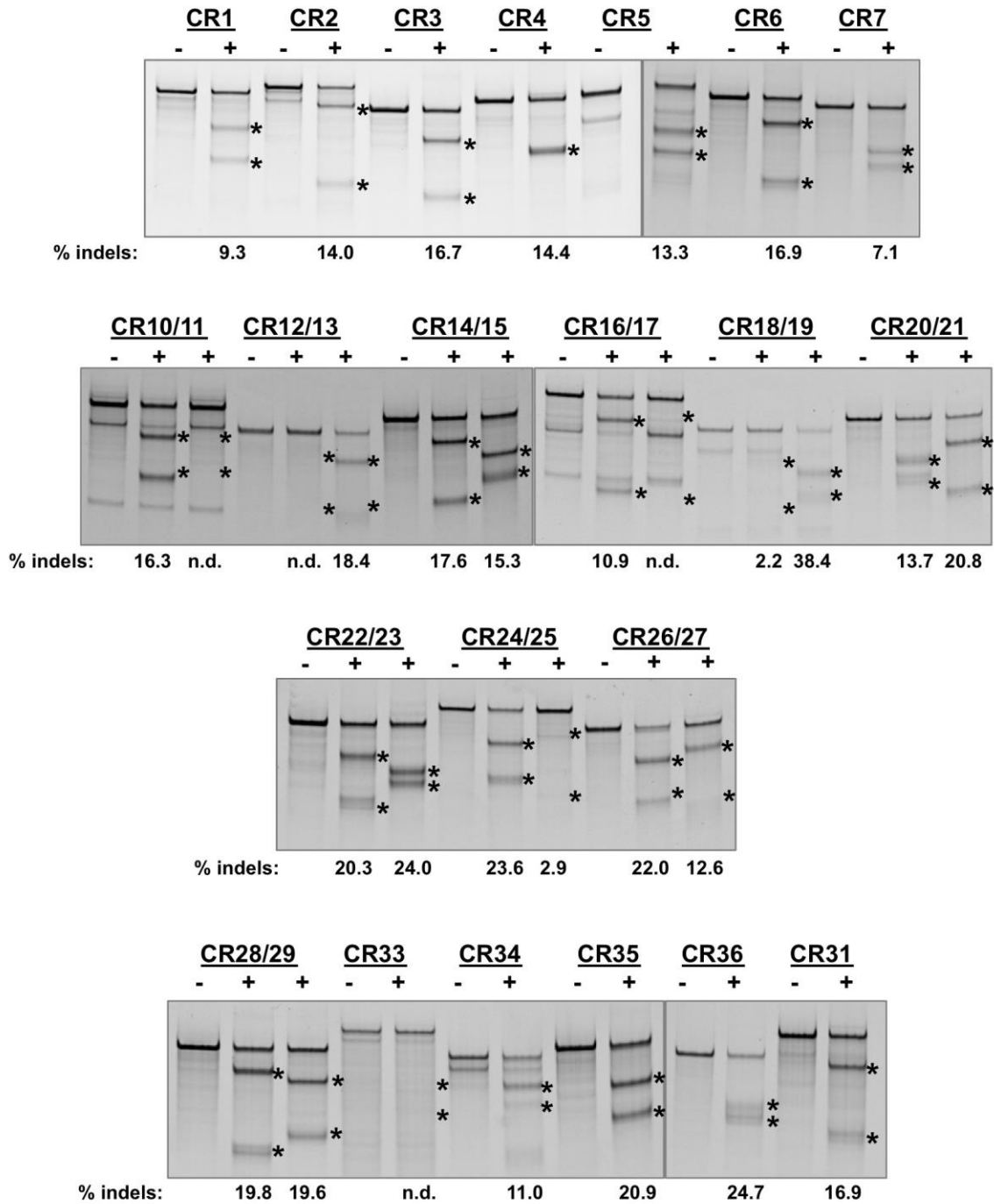
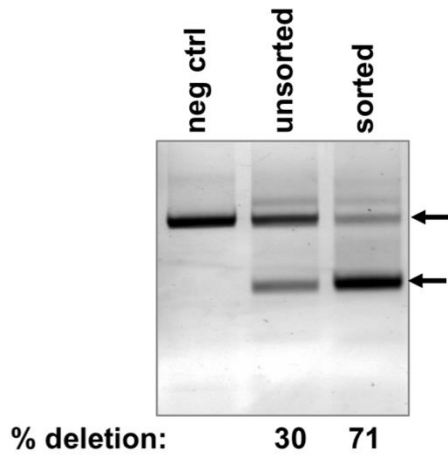


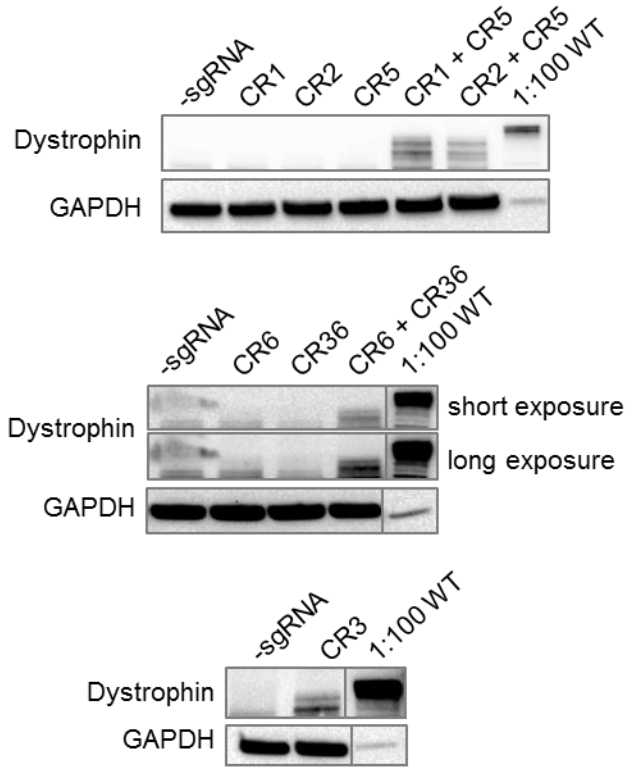
**Supplementary Figure 1:** Images of TBE-PAGE gels used to quantify Surveyor assay results to measure day 3 gene modification in Table 1. Asterisks mark expected sizes of bands indicative of nuclease activity.



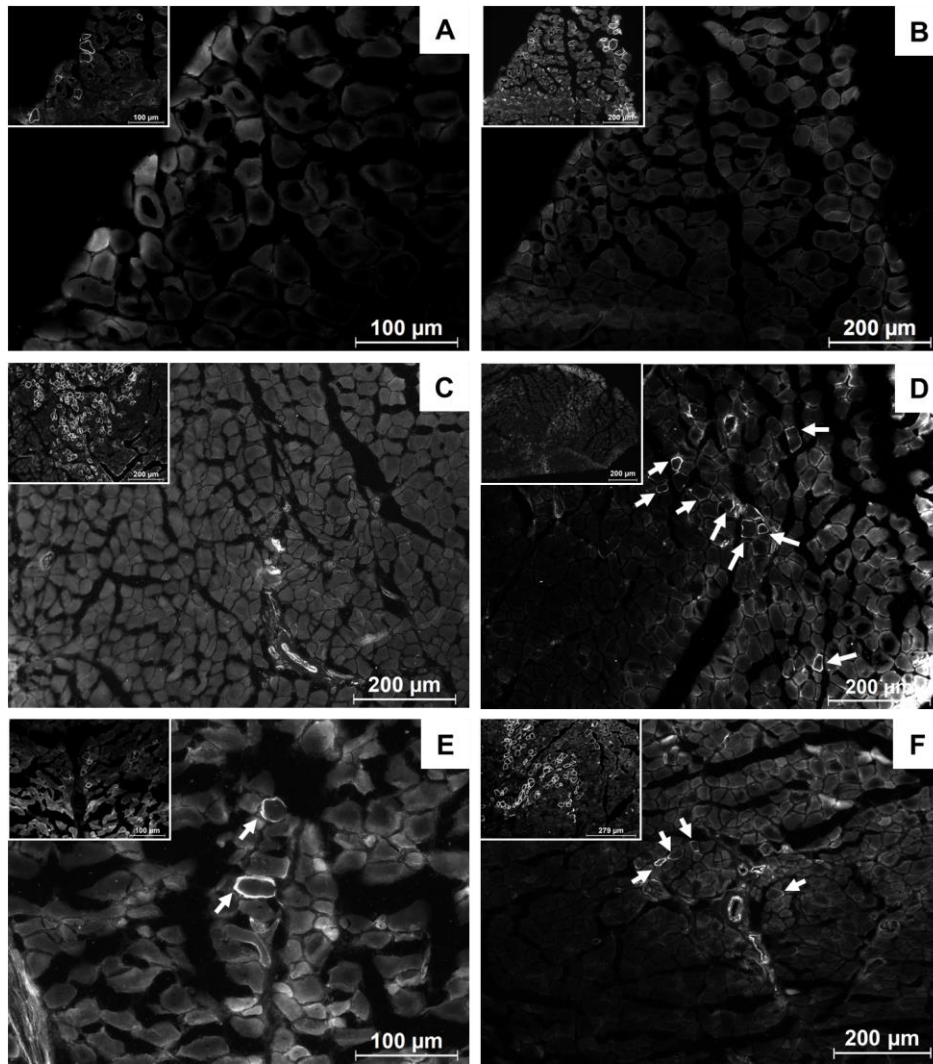
**Supplementary Figure 2:** Images of TBE-PAGE gels used to quantify Surveyor assay results to measure day 10 gene modification in Table 1. Asterisks mark expected sizes of bands indicative of nuclease activity.



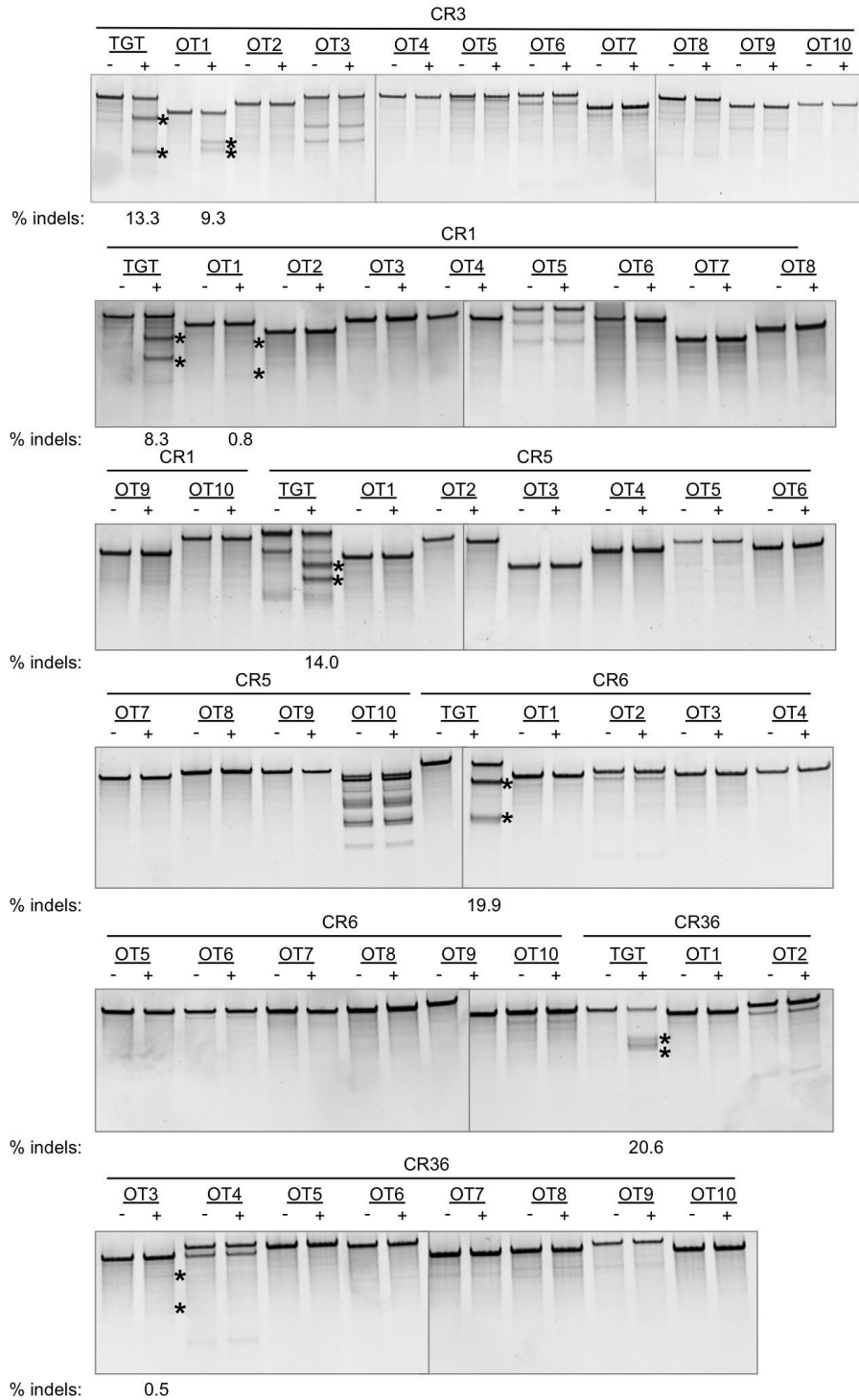
**Supplementary Figure 3:** Verification of flow cytometry-based enrichment of gene-modified DMD myoblasts used for *in vivo* cell transplantation experiment. DMD myoblasts were treated with Cas9 with or without sgRNA expression vectors for CR1 and CR5 and sorted for GFP+ cells by flow cytometry. Deletions at the exon 51 locus were detected by end-point PCR using primers flanking the locus. Neg ctrl: DMD myoblasts treated with Cas9 only and sorted for GFP+ cells.



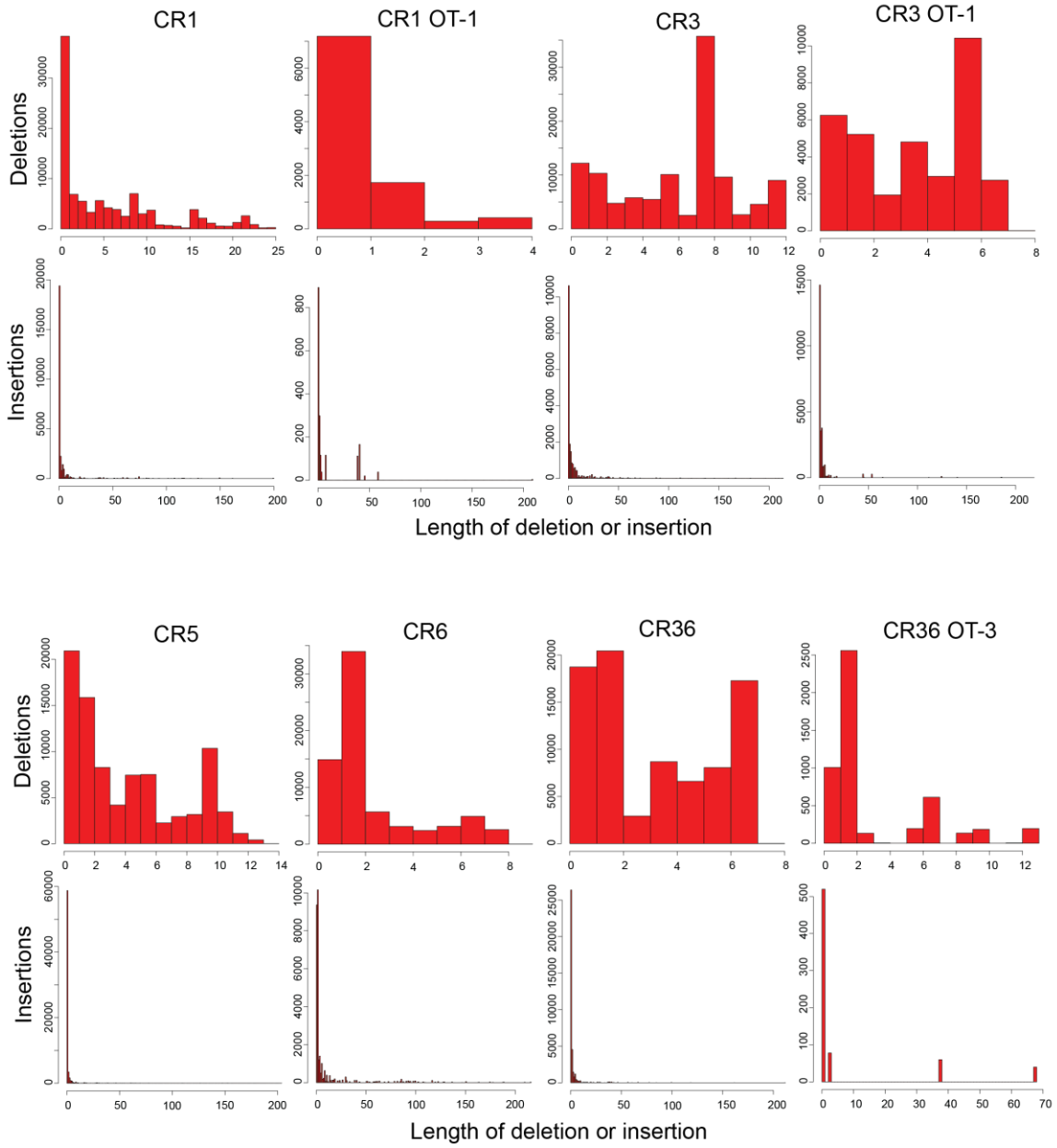
**Supplementary Figure 4:** Dystrophin western blots including wild-type controls. The western blots from Figures 3D, 4D, and 5D all included lysate from differentiated wild-type human skeletal myoblasts, diluted 1:100, on the same gel. Importantly, these wild-type cells were independently isolated and not controlled for muscle group, patient age or health, or passage number, and therefore have different capacity for *in vitro* differentiation. Furthermore, these wild-type cells did not undergo plasmid electroporation and cell sorting. For all of these reasons, it is not accurate to compare dystrophin levels between these cell sources. Nevertheless, the wild-type control confirms the ability to detect the edited dystrophin protein product at the correct size, slightly smaller than the wild-type band due to the deleted exons.



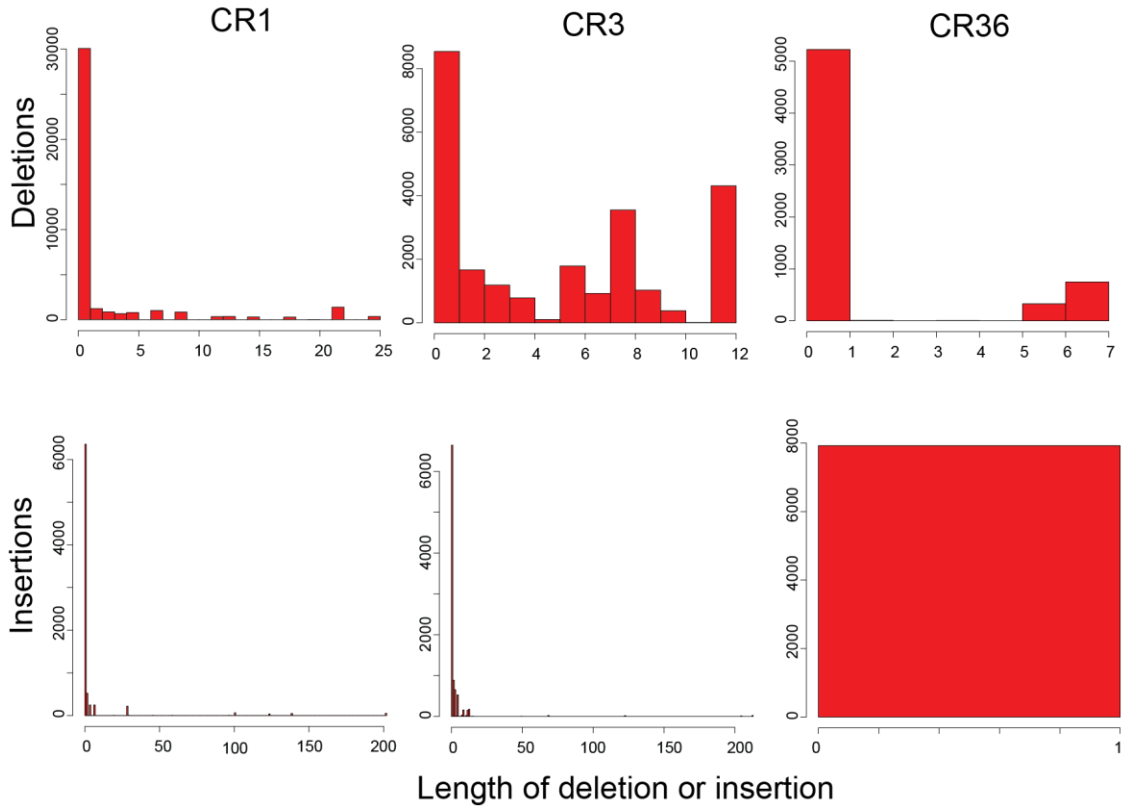
**Supplementary Figure 5:** Additional immunofluorescence images probing human dystrophin expression. Serial sections from regions stained with anti-human spectrin are shown inset in top left. (A-C) Sections from muscles injected with untreated human DMD myoblasts. (D-F) Sections from muscles injected with CR1/5 treated human DMD myoblasts enriched by flow cytometry. White arrows indicate dystrophin positive fibers.



**Supplementary Figure 6** - Images of TBE-PAGE gels used to quantify Surveyor assay results to measure on-target and off-target gene modification in Supplementary Table 2. Asterisks mark expected sizes of bands indicative of nuclease activity.

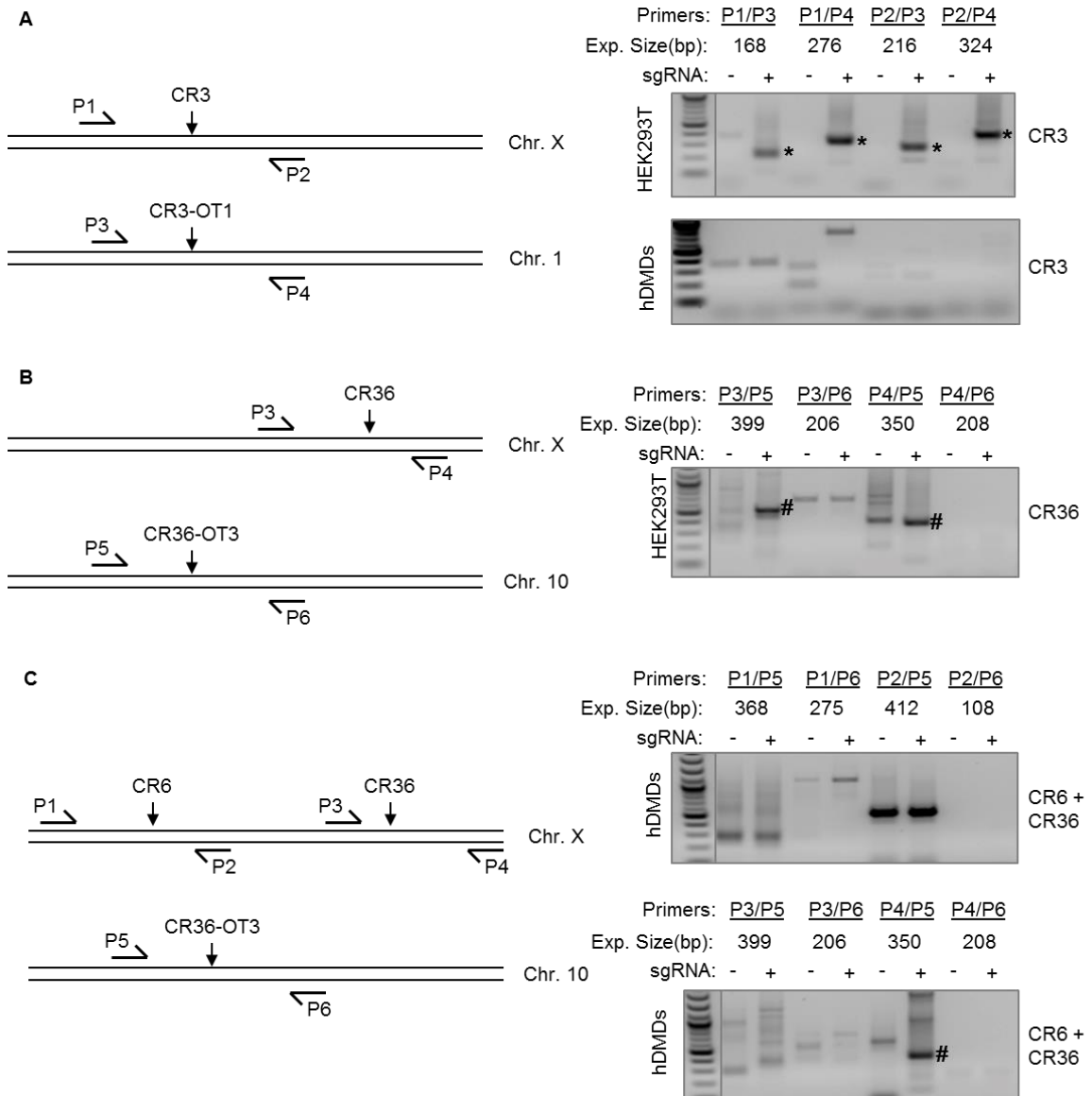


**Supplementary Figure 7** – Distribution of indel size in HEK293T cells treated with Cas9 and the indicated sgRNA as determined by deep sequencing.



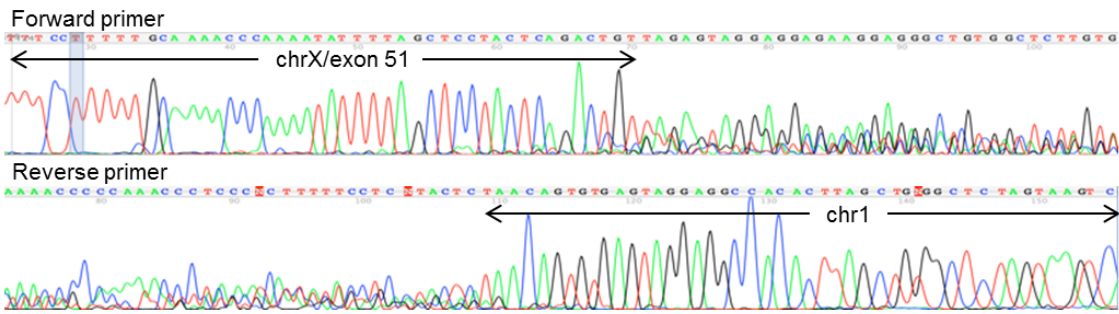
**Supplementary Figure 8** – Distribution of indel size in DMD myoblasts treated with Cas9 and the indicated sgRNA as determined by deep sequencing.



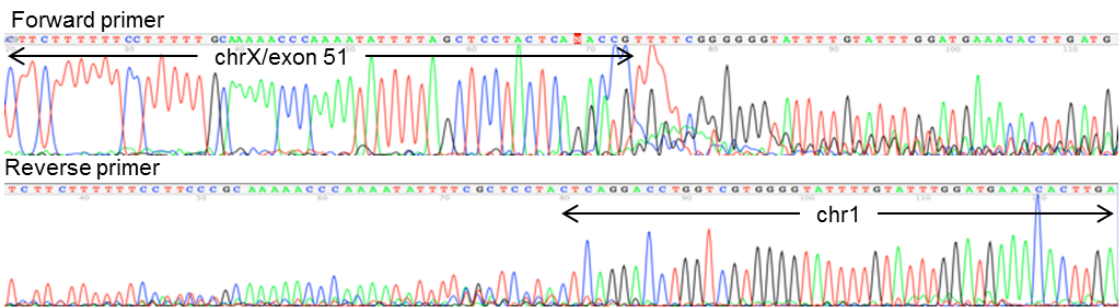


**Supplementary Figure 9 – End-point nested PCR to detect chromosomal translocations caused by CRISPR/Cas9 off-target activity for CR3 and CR6/CR36 in human cells.** Nested end-point PCR analysis was used to detect translocations in (A) HEK293T or sorted hDMD cells treated with Cas9 and CR3 as indicated, (B) HEK293T cells treated with Cas9 and CR36 alone, or (C) sorted hDMD cells treated with Cas9, CR6, and CR36 expression cassettes. The second nested PCR reaction for translocation was amplified using custom primers for each predicted translocation locus to maximize specificity (See Supplementary Table 2). The schematic depicts the relative location of nested primer pairs used to probe for the presence of translocations. Each possible translocation event was first amplified from genomic DNA isolated from cells treated with or without the indicated sgRNA(s). A second nested PCR reaction was performed using primers within the predicted PCR amplicons that would result from translocations. Expected size was estimated based on the indicated primer binding site and the predicted sgRNA cut site at each locus. \*indicates bands detected at the expected size and verified by Sanger sequencing from each end. #indicates amplicons in which Sanger sequencing showed sequences other than the predicted translocation, likely a result of mispriming during the nested PCR.

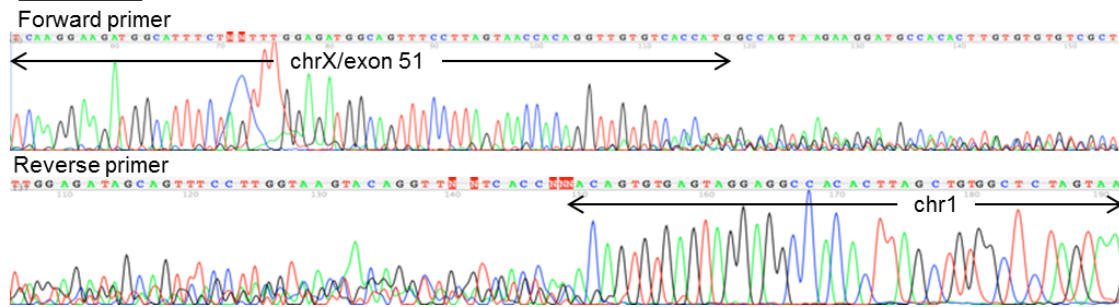
**P1/P3 band**



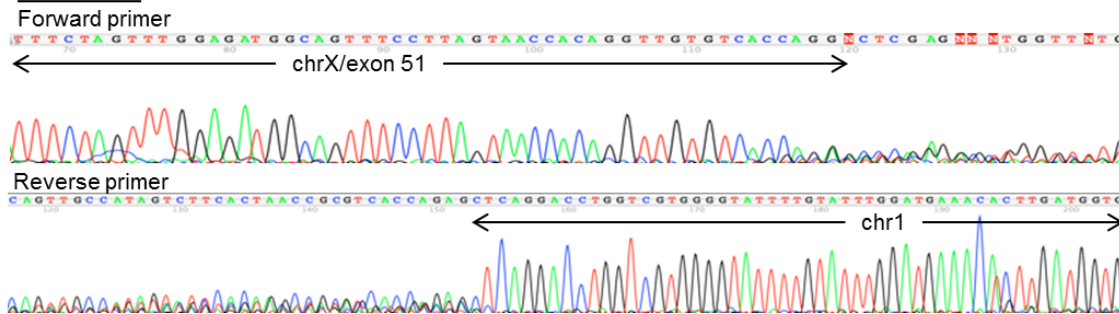
**P1/P4 band**



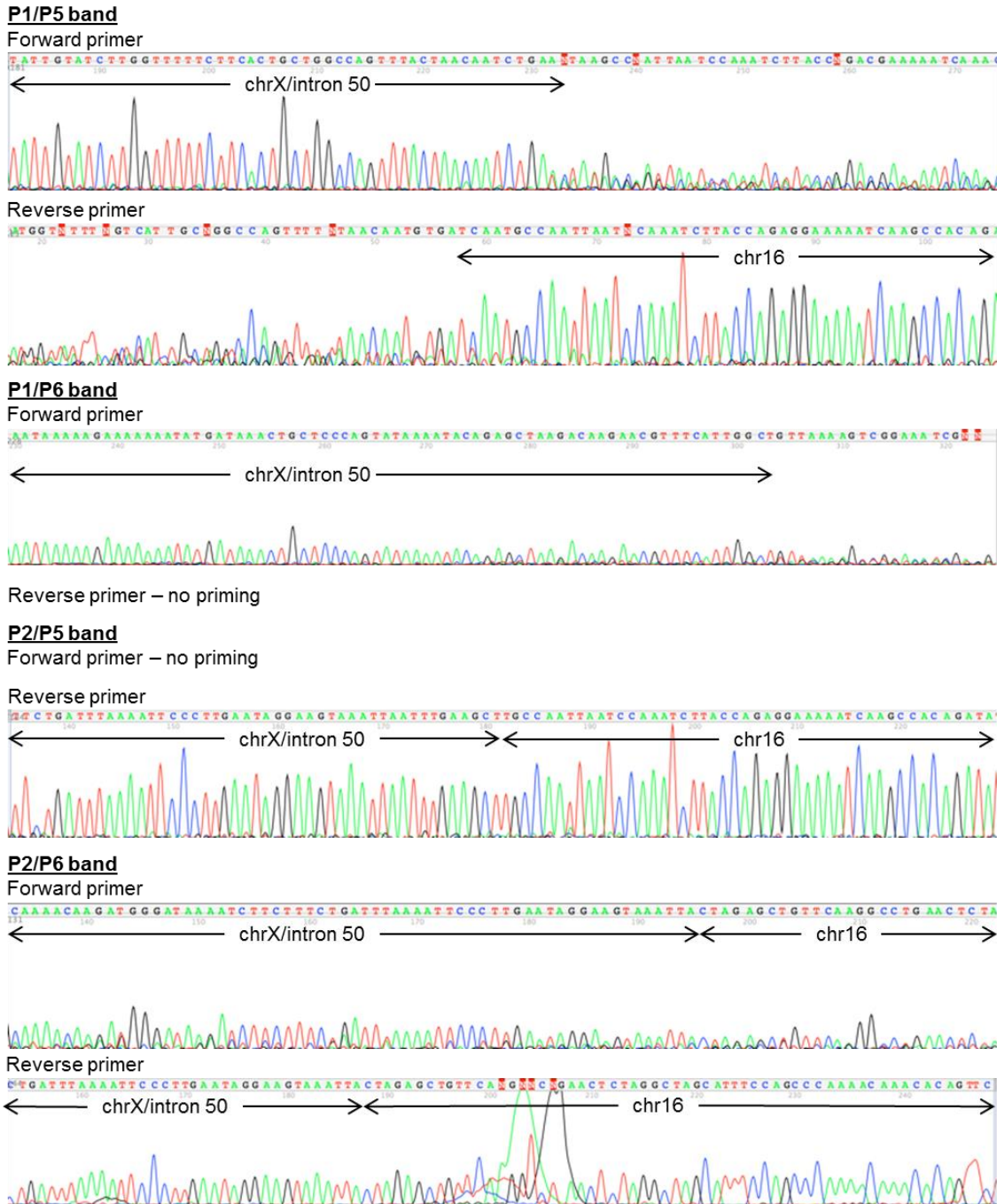
**P2/P3 band**



**P2/P4 band**



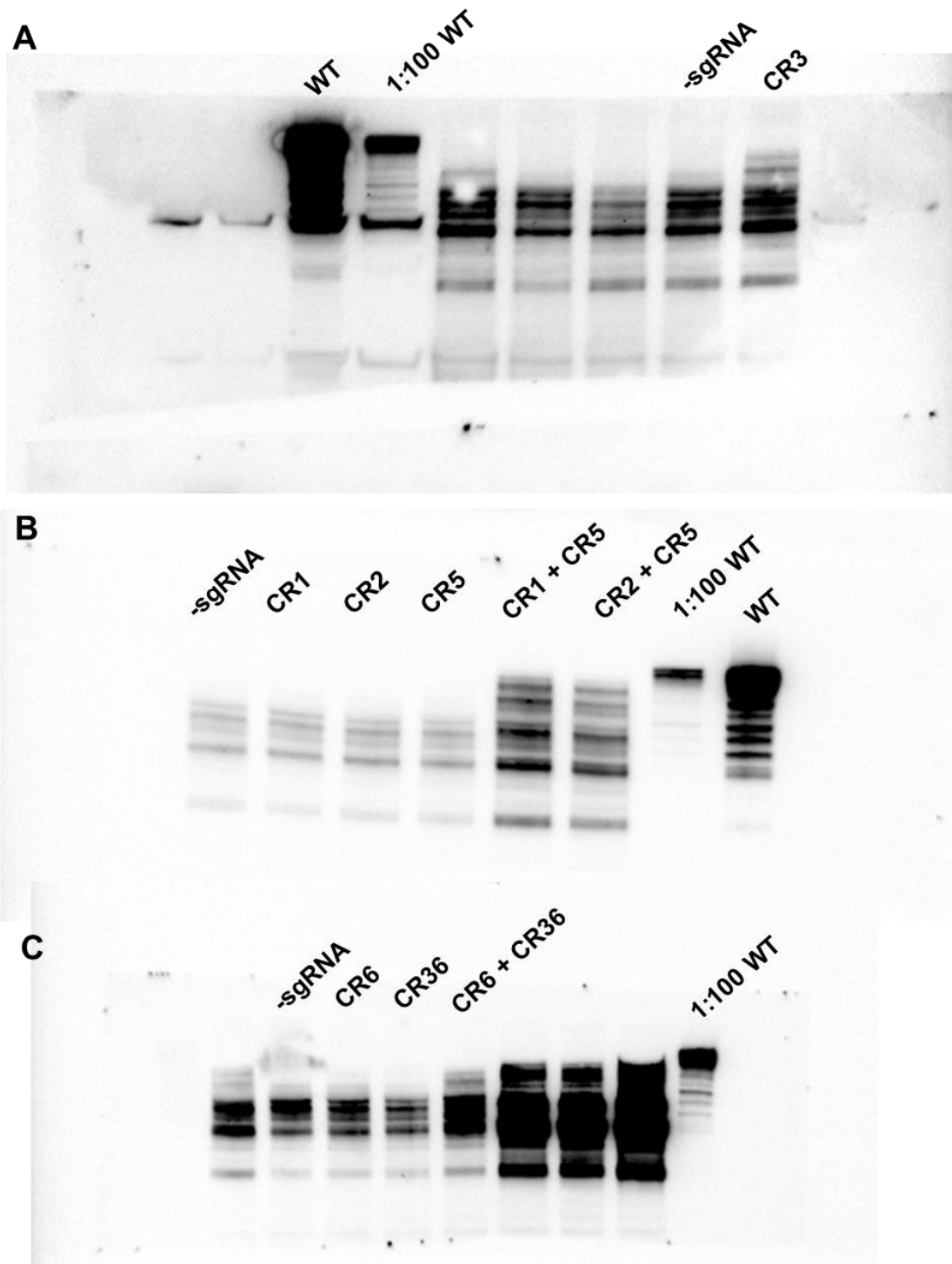
**Supplementary Figure 10-** Sanger sequencing chromatograms for bands detected in Supplementary Figure 9 resulting from translocations between CR3 and CR3-OT1, on chromosomes X and 1, respectively, in HEK293T cells treated with Cas9 and CR3 gene cassettes. Arrows show regions of homology to the indicated chromosome nearby the expected break points caused by the appropriate sgRNAs. Note that sequencing reads become out of phase near the break point due to the error-prone nature of DNA repair by non-homologous end-joining.



**Supplementary Figure 11** - Sanger sequencing chromatograms for bands detected in Figure 7C resulting from translocations between CR1 and CR1-OT1, on chromosomes X and 16, respectively, in HEK293T cells treated with Cas9 and CR1 gene cassettes. Arrows show regions of homology to the indicated chromosome nearby the expected break points caused by the appropriate sgRNAs. Note that sequencing reads become out of phase near the break point due to the error-prone nature of DNA repair by non-homologous end-joining.

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TACGCTCATCTCTTCGACGACAAAGTCAATAACAGCTCAAGAGGCGCCGATATACAGGATGGGGCGGCTGTCAAGAAA  
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**tcgaggacggcagcgtgacgtcgccgaccactaccagcagaacacccccatcggcgacggccccgtgctgctgcccgac**  
**aacctacctgacaccagtcggcctgagcaaaagcccaacgagaagcgcatcacatggtcctgctggaggtcgt**  
**gaccgcccgggatcactctcgccatggacgagctgtacaagAccggTTAG**

**Supplementary Figure 12. hCas9-T2A-GFP DNA sequence. SpCas9 human optimized sequence, HA tag, T2A peptide, eGFP sequence.**



**Supplementary Figure 13.** Uncropped dystrophin western blots for A) Figure 3D, B) Figure 4D, and C) Figure 5D.

**Supplementary Table 1:** List of sgRNA targets in this study. PAM: protospacer-adjacent motif.

Name	Target	Strand	19bp protospacer	PAM	Target Finder
CR1	Intron 50	+	GATTGGCTTTGATTTCCCTA	GGG	Manual Inspection
CR2	Intron 50	-	GTGTAGAGTAAGTCAGCCTA	TGG	Manual Inspection
CR3	Exon 51-5'	+	GCCTACTCAGACTGTTACTC	TGG	Manual Inspection
CR4	Exon 51-3'	+	GTTGGACAGAACTTACCGAC	TGG	Manual Inspection
CR5	Intron 51	-	GCAGTTGCCTAAGAACTGGT	GGG	Manual Inspection
CR6	Intron 44	-	GGGGCTCCACCCTCACGAGT	GGG	UCSC Browser (Cong et al. Science 2013)
CR7	Intron 55	+	GTTTGCTTCGCTATAAAACG	AGG	UCSC Browser (Cong et al. Science 2013)
CR10	Exon 45	+	GCCAGGATGGCATTGGGCAG	CGG	Manual Inspection
CR11	Exon 45	+	GCTGAATCTGCGGTGGCAGG	AGG	Manual Inspection
CR12	Exon 46	-	GTTCTTTTGTTCTTCTAGCC	TGG	Manual Inspection
CR13	Exon 46	+	GGAAAAGCTTGAGCAAGTCA	AGG	Manual Inspection
CR14	Exon 47	+	GGAAGAGTTGCCCTGCGCC	AGG	Excel File from Mali et al. Science 2013
CR15	Exon 47	+	GACAAATCTCCAGTGGATAA	AGG	Manual Inspection
CR16	Exon 48	-	GTGTTTCTCAGGTAAAGCTC	TGG	Manual Inspection
CR17	Exon 48	+	GGAAGGACCATTTGACGTTA	AGG	Manual Inspection
CR18	Exon 49	-	GAAGTCTATTTTCTGTTTCC	TGG	Manual Inspection
CR19	Exon 49	+	GCCAGCCACTCAGCCAGTGA	AGG	Manual Inspection
CR20	Exon 50	+	GGTATGCTTTTCTGTTAAAG	AGG	Manual Inspection
CR21	Exon 50	+	GCTCCTGGACTGACCACTAT	TGG	Manual Inspection
CR22	Exon 52	+	GGAACAGAGGCGTCCCCAGT	TGG	Manual Inspection
CR23	Exon 52	+	GGAGGCTAGAACAAATCATT	CGG	Manual Inspection
CR24	Exon 53	+	GACAAGAACACCTTCAGAAC	CGG	Manual Inspection
CR25	Exon 53	-	GGGTTTCTGTGATTTTCTTT	TGG	Manual Inspection
CR26	Exon 54	+	GGGCCAAAGACCTCCGCCAG	TGG	Manual Inspection
CR27	Exon 54	+	GTTGGAGAAGCATTTCATAAA	AGG	Manual Inspection
CR28	Exon 55	-	GTCGCTCACTCACCTGCAA	AGG	Manual Inspection
CR29	Exon 55	+	GAAAAGAGCTGATGAAACAA	TGG	Manual Inspection
CR31	Exon 51	+	GGAGATGATCATCAAGCAGA	AGG	Manual Inspection
CR33	Intron 44	-	GCACAAAAGTCAAATCGGAA	TGG	UCSC Browser (Cong et al. Science 2013)
CR34	Intron 44	-	GATTTCAATATAAGATTCGG	AGG	UCSC Browser (Cong et al. Science 2013)
CR35	Intron 55	-	GCTTAAGCAATCCCGAACTC	TGG	UCSC Browser (Cong et al. Science 2013)
CR36	Intron 55	-	GCCTTCTTTATCCCCTATCG	AGG	UCSC Browser (Cong et al. Science 2013)

**Supplementary Table 2** - Summary of top 10 off target sites predicted *in silico* and activity at each site as detected by the Surveyor assay in HEK293T cells transfected with Cas9 and the indicated sgRNA expression cassettes. n.d.: not detected.

Guide	Target	Sequence	PAM	Score	Chr	Gene	Intron/Exon	# MMs	% indels
CR3	Guide	GCCTACTCAGACTGTTACTC	-	-	-	-	-	-	-
	Target	tCCTACTCAGACTGTTACTC	TGG	-	X	DMD	Exon	1	13.0
	OT1	tCCTACTCAcACTGTTACTC	AGG	7.4	1	STRIP1	Intron	2	9.3
	OT2	aCCTgCTCAcACTGTTACTC	CAG	2.5	2	ARHGAP25	Intron	3	n.d.
	OT3	GCaTtCTCAaACTGTTACTC	AGG	2.4	13	None	None	3	n.d.
	OT4	GgaTtCTCAcACTGTTACTC	GGG	1.3	14	PGPEP1	Exon	4	n.d.
	OT5	aCaTACTtAtACTGTTACTC	TAG	1.3	19	MDGA2	Intron	4	n.d.
	OT6	tatTcCTaAGACTGTTACTC	AAG	0.9	8	LPPR1	Intron	5	n.d.
	OT7	aaggACTaAGACTGTTACTC	GGG	0.9	9	RNF122	Intron	5	n.d.
	OT8	GagctCTCAcACTGTTACTC	TAG	0.8	3	DNMBP	Exon	5	n.d.
	OT9	GCaaAaTgAGACTGTTACTC	CAG	0.8	5	SLC12A2	Intron	4	n.d.
OT10	cCtcAtTCAGACTGTTACTC	AAG	0.8	4	KCNIP4	Intron	4	n.d.	
CR1	Guide	GATTGGCTTTGATTCCCTA	-	-	-	-	-	-	-
	Target	cATTGGCTTTGATTCCCTA	GGG	-	X	DMD	Intron	1	8.3
	OT1	aATTGGCATTGATTCCCTA	GAG	7.1	16	None	None	2	0.8
	OT2	cATTGGCTTTaATTCCCTA	TAG	4.8	4	None	None	2	n.d.
	OT3	GATaGGCTgTGATTCCCTA	GAG	3.9	9	None	None	2	n.d.
	OT4	GAaTaGCcTTGATTCCCTA	AAG	2.4	1	None	None	3	n.d.
	OT5	aATTtGCTTTGATTCCCTg	AGG	1.5	1	TIMM17A	Intron	3	n.d.
	OT6	GATgtGCTTTGATTCCCTt	GGG	1.4	17	MYO1D	Intron	3	n.d.
	OT7	aATTGGtTTTaATTCCCTA	AAG	1.1	8	PIK1A	Intron	3	n.d.
	OT8	aATTGGgTTTGATTCCCTt	TGG	1.1	11	MS4A1	Intron	3	n.d.
	OT9	GATgGGtTTTtATTCCCTA	GAG	1.0	11	None	None	3	n.d.
OT10	GAaTGGtTTTGATTCCCTg	GAG	1.0	11	None	None	3	n.d.	
CR5	Guide	GCAGTTGCCTAAGAAGCTGGT	-	-	-	-	-	-	-
	Target	aCAGTTGCCTAAGAAGCTGGT	GGG	-	X	DMD	Intron	1	14.0
	OT1	cCAGTTGtCTAAGAAGCTGGg	GAG	1.5	5	NRG1	Intron	3	n.d.
	OT2	GCAGTTGCCTgtGAAGCTGGT	AGG	1.4	X	None	None	2	n.d.
	OT3	GCAGaTGCagAAGAAGCTGGT	GAG	1.4	19	SMIM7	Intron	3	n.d.
	OT4	GCAGTTcCagAAGAAGCTGGT	GAG	0.9	11	GLB1L2	Intron	3	n.d.
	OT5	caAcTTGCCTaTGAAGCTGGT	AGG	0.7	8	ASAP1	Intron	4	n.d.
	OT6	aCAccTGCCTAAGAAGCTGGa	GGG	0.7	11	None	None	4	n.d.
	OT7	tCAGgTGgCTAAGAAGCTGGg	TGG	0.7	14	NIN	Intron	4	n.d.
	OT8	GaAGTTGgCcAAGAAGCTGGa	GAG	0.6	7	None	None	4	n.d.
	OT9	GCTGcTGCCcAAGAAGCTGGc	AGG	0.6	11	AMOTL1	Intron	4	n.d.
OT10	tCAGcTGgCTAAGAAGcGGT	AAG	0.6	7	ACTR3C	Intron	4	n.d.	
CR6	Guide	GGGGCTCCACCCTCACGAGT	-	-	-	-	-	-	-

	Target	aGGGCTCCACCCTCACGAGT	GGG	-	X	DMD	Intron	1	19.9
	OT1	GcaGCTCagCCCTCACGAGT	CAG	0.8	3	None	None	4	n.d.
	OT2	GGGGCTcCaCaTCACGAGT	GAG	0.8	8	None	None	3	n.d.
	OT3	GGGGCTcCccCTCACtAGT	GAG	0.6	8	None	None	3	n.d.
	OT4	GGGGaTCCACCtTCACcAGT	CAG	0.6	2	None	None	3	n.d.
	OT5	aGGGCTggACCCTCACaAGT	AAG	0.4	16	AXIN1	Intron	4	n.d.
	OT6	tGGtCTCCtCCCcCACGAGT	GGG	0.4	2	None	None	4	n.d.
	OT7	aGGGCTCCcaCCcCACGAGT	GAG	0.3	5	None	None	4	n.d.
	OT8	GaGGCTCCAtaCTCACcAGT	GAG	0.3	11	None	None	4	n.d.
	OT9	GGaGCTgCcCCtTCACGAGT	GGG	0.3	3	None	None	4	n.d.
	OT10	atGaTCCACCCTCAaGAGT	AAG	0.3	8	AGPAT5	None	4	n.d.
CR36	Guide	GCCTTCTTTATCCCCTATCG	-	-	-	-	-	-	-
	Target	GCCTTCTTTATCCCCTATCG	AGG	-	X	DMD	Intron	0	20.6
	OT1	GtCTgCTgTgTCCCCTATCG	GGG	1.3	21	None	None	4	n.d.
	OT2	cCCTTCTcTATCCCCTgTCG	TGG	1.3	8	None	None	3	n.d.
	OT3	GCCTTCTTTATCCCCTcTCt	TGG	0.9	10	None	None	2	0.5
	OT4	GCgcTCTTtTCCCCTATCt	TAG	0.6	16	None	None	4	n.d.
	OT5	GCCcTCTgTcTCCCCTgTCG	CAG	0.5	1	NFASC	None	4	n.d.
	OT6	tCCATCTtTgTCCCCTATg	AGG	0.5	10	None	None	4	n.d.
	OT7	aCCtTCTCTcTCCCCTATaG	AGG	0.5	5	LOC100996485	Intron	4	n.d.
	OT8	GtTTCTTTtTCCCCTATgG	GAG	0.5	3	None	None	4	n.d.
	OT9	tgCTTCTTaATCCCCTATCa	AAG	0.4	7	None	None	4	n.d.
	OT10	aCCTTCTTacTCCCCTATCc	GGG	0.4	10	ADARB2	None	4	n.d.



**Supplementary Table 3** – Summary of deep sequencing data in HEK293T cells. Two target sites (CR6-OT5 and CR36-OT2) did not meet filtering criteria.

Name	Control					Treated				
	Indel Rate	Total Fragments	Deletion Rate	Insertion Rate	Mismatch Rate	Indel Rate	Total Fragments	Deletion Rate	Insertion Rate	Mismatch Rate
CR1-ON	0.00052	243027	0.0004	0.00017	0.02429	0.43347	267751	0.34572	0.0916	0.05227
CR1-OT1	0.00027	411808	0.00017	0.00011	0.02328	0.02714	401695	0.02396	0.00348	0.02598
CR1-OT2	0.00022	365026	0.0002	2.00E-05	0.01897	0.00203	425954	0.00064	0.00139	0.02196
CR1-OT3	0.00016	328638	0.00016	0	0.01923	0.0002	388723	0.00014	6.00E-05	0.02115
CR1-OT4	0.00055	361026	0.00052	4.00E-05	0.02049	0.00051	417425	0.00044	0.0001	0.02199
CR1-OT5	0.00028	359377	0.00022	8.00E-05	0.02212	0.00175	398647	0.00101	0.00076	0.02205
CR1-OT6	0.00044	321939	0.00037	9.00E-05	0.02441	0.00057	339778	0.00053	4.00E-05	0.02369
CR1-OT7	0.00051	379105	0.00043	0.00012	0.01914	0.00117	416034	0.0011	8.00E-05	0.02145
CR1-OT8	0.00046	335770	0.00037	9.00E-05	0.02824	0.00068	385279	0.00061	8.00E-05	0.02874
CR1-OT9	0.00092	357883	0.00091	2.00E-05	0.02335	0.00089	363909	0.00084	0.0001	0.0247
CR1-OT10	0.00049	284512	0.00045	5.00E-05	0.02047	0.0003	342036	0.00022	0.0001	0.02172
CR3-ON	0.00053	302973	0.0005	5.00E-05	0.02588	0.47124	253192	0.42175	0.0555	0.05982
CR3-OT1	0.00013	719339	0.00013	1.00E-05	0.01903	0.14208	370557	0.08705	0.05862	0.0343
CR3-OT2	0.00015	182795	0.00015	3.00E-05	0.02919	0.00018	287311	0.00018	0	0.02967
CR3-OT3	0.00031	328157	0.00031	4.00E-05	0.01887	0.00026	409230	0.00025	1.00E-05	0.02052
CR3-OT4	0.00016	391369	0.00016	2.00E-05	0.01897	0.00013	420277	0.00013	3.00E-05	0.02103
CR3-OT5	0.00027	372827	0.00027	2.00E-05	0.02111	0.00012	430488	0.00012	3.00E-05	0.02245
CR3-OT6	0.00021	342654	0.00021	0	0.02423	0.00038	368779	0.00038	0	0.02421
CR3-OT7	0.0003	359973	0.0003	0	0.02161	0.00032	380575	0.00031	1.00E-05	0.02209
CR3-OT8	0.00019	397337	0.00017	2.00E-05	0.01781	0.00011	437460	0.00011	0	0.0202
CR3-OT9	0.0002	388197	0.0002	3.00E-05	0.0245	0.00014	458468	0.00014	2.00E-05	0.02507
CR3-OT10	0.00019	365463	0.00019	1.00E-05	0.02372	0.0001	406307	0.0001	3.00E-05	0.02507
CR5-ON	0.00099	309859	0.00086	0.00017	0.02189	0.49817	285901	0.2862	0.22299	0.04453
CR5-OT1	0.00045	291709	0.00045	1.00E-05	0.0222	0.00056	377889	0.00056	1.00E-05	0.0228
CR5-OT2	0.0001	369417	0.0001	0	0.01799	7.00E-05	431321	7.00E-05	1.00E-05	0.01954
CR5-OT3	4.00E-05	392030	4.00E-05	0	0.02709	7.00E-05	467339	7.00E-05	0	0.02871
CR5-OT4	0.00018	346914	0.00018	1.00E-05	0.02334	0.00016	432302	0.00016	1.00E-05	0.02427
CR5-OT5	0.00014	295921	0.00014	0	0.02763	0.0001	446745	0.0001	3.00E-05	0.02819
CR5-OT6	0.00021	352160	0.00021	1.00E-05	0.01255	0.00064	397458	0.00028	0.00036	0.01498
CR5-OT7	0.00019	329004	0.00019	2.00E-05	0.02071	0.00019	412376	0.00019	1.00E-05	0.02102
CR5-OT8	0.00091	322079	0.00089	3.00E-05	0.02439	0.00127	393387	0.00121	7.00E-05	0.02697
CR5-OT9	0.00017	374068	0.00017	0	0.01671	0.00018	432857	0.00018	1.00E-05	0.01824
CR5-OT10	0.00021	179114	0.00021	0	0.01859	0.00023	201890	0.00023	2.00E-05	0.02048
CR6-ON	0.0003	290616	0.0003	3.00E-05	0.03263	0.41742	185015	0.34285	0.10845	0.11217
CR6-OT1	7.00E-05	428755	7.00E-05	0	0.02394	9.00E-05	457045	9.00E-05	0	0.02423

<b>CR6-OT2</b>	0.00016	409001	0.00016	0.0001	0.99879	0.00022	447076	0.00022	0.00013	0.99861
<b>CR6-OT3</b>	0.00023	434076	0.00021	5.00E-05	0.02102	0.00024	465851	0.00024	4.00E-05	0.02116
<b>CR6-OT4</b>	0.0002	299885	0.00019	5.00E-05	0.03155	0.00014	461310	0.00013	4.00E-05	0.03442
<b>CR6-OT5</b>	0	0	0	0	0	0	0	0	0	0
<b>CR6-OT6</b>	0.00128	371603	0.00122	9.00E-05	0.02076	0.00141	435021	0.00133	9.00E-05	0.02051
<b>CR6-OT7</b>	0.00097	357297	0.00094	5.00E-05	0.02202	0.00116	389245	0.00116	0	0.02097
<b>CR6-OT8</b>	5.00E-05	391996	5.00E-05	3.00E-05	0.03137	8.00E-05	402702	7.00E-05	1.00E-05	0.03271
<b>CR6-OT9</b>	0.00034	278774	0.0003	6.00E-05	0.02209	0.00042	351486	0.00041	2.00E-05	0.02168
<b>CR6-OT10</b>	0.00019	371608	0.00019	4.00E-05	0.02196	0.00013	390906	0.00013	0	0.02059
<b>CR36-ON</b>	0.00038	315822	0.00032	7.00E-05	0.02423	0.46651	235772	0.33855	0.13833	0.05232
<b>CR36-OT1</b>	0.00042	223999	0.0004	2.00E-05	0.01796	0.00047	145707	0.00047	0.00011	0.02122
<b>CR36-OT2</b>	0	628	0	0	0.01274	0.07077	1526	0	0.07077	0.05636
<b>CR36-OT3</b>	0.00039	417392	0.00039	5.00E-05	0.02281	0.01179	480401	0.01035	0.00145	0.02337
<b>CR36-OT4</b>	0.0016	348794	0.00146	0.00015	0.02001	0.00174	501588	0.00154	0.00021	0.02138
<b>CR36-OT5</b>	0.00123	372201	0.00113	0.00012	0.02009	0.00138	475009	0.00132	7.00E-05	0.02013
<b>CR36-OT6</b>	0.00052	358534	0.00051	2.00E-05	0.01993	0.00062	425704	0.00058	4.00E-05	0.02172
<b>CR36-OT7</b>	0.00023	311339	0.00022	5.00E-05	0.02392	0.0002	316903	0.00016	5.00E-05	0.02522
<b>CR36-OT8</b>	0.00323	396424	0.00294	0.00031	0.0247	0.00215	452046	0.00196	0.0002	0.02584
<b>CR36-OT9</b>	0.00018	360872	0.00018	0	0.02212	0.00014	414386	0.00014	1.00E-05	0.02495
<b>CR36-OT10</b>	0.00031	425413	0.0003	3.00E-05	0.02028	0.0021	453005	0.00149	0.00063	0.02174

**Supplementary Table 4** – Summary of deep sequencing data in DMD myoblasts.

Control						Treated				
Name	Indel Rate	Total Fragments	Deletion Rate	Insertion Rate	Mismatch Rate	Indel Rate	Total Fragments	Deletion Rate	Insertion Rate	Mismatch Rate
<b>CR1-ON</b>	0.00043	383850	0.00034	0.00013	0.0246	0.11259	404882	0.09449	0.01815	0.02831
<b>CR1-OT1</b>	0.00048	447057	0.00039	0.0001	0.02582	0.00144	269616	0.00141	6.00E-05	0.02438
<b>CR36-ON</b>	0.00034	472513	0.00033	2.00E-05	0.02265	0.03234	405322	0.01281	0.01955	0.01671
<b>CR36-OT3</b>	0.00044	490131	0.00044	3.00E-05	0.02356	0.00038	444132	0.00035	5.00E-05	0.0218
<b>CR3-ON</b>	0.00051	303508	0.0005	3.00E-05	0.02662	0.06907	430026	0.05357	0.01637	0.02598
<b>CR3-OT1</b>	0.00012	451889	0.00012	0	0.02138	0.0266	517404	0.01034	0.01629	0.02066

**Supplementary Table 5: Sequences of primers used in this study.**

Primer name	Primer sequence	Notes
Cell-CR1/2-F	GAGAGGTTATGTGGCTTTACCA	Forward Surveyor primer for CR1/2
Cell-CR1-R	AAAAATGCTTCCCACTTTGC	Reverse Surveyor primer for CR1
Cell-CR2-R	CTCATTCTCATGCCTGGACA	Reverse Surveyor primer for CR2
Cell-CR3-F	GAGTTTGGCTCAAATTGTTACTCTT	Forward Surveyor primer for CR3
Cell-CR3-R	GGGAAATGGTCTAGGAGAGTAAAGT	Reverse Surveyor primer for CR3
Cell-CR4/31-F	GTTTGGCTCAAATTGTTACTCTTCA	Forward Surveyor primer for CR4 or CR31
Cell-CR4/31-R	GTGAGAGTAATGTGTTTGTGAGAG	Reverse Surveyor primer for CR4 or CR31
Cell-CR5-F	CGGGCTTGGACAGAACTTAC	Forward Surveyor primer for CR5
Cell-CR5-R	CTGCGTAGTGCCAAAAACAAA	Reverse Surveyor primer for CR5
Cell-CR6-F	TAATTTCATTGAAGAGTGGCTGAA	Forward Surveyor primer for CR6
Cell-CR6-R	AAGCCCTGTGTGGTAGTAGTCAGT	Reverse Surveyor primer for CR6
Cell-CR7-F	TGAGTCATGTTGGATAACCACTCT	Forward Surveyor primer for CR7
Cell-CR7-R	GAAGGTCAGGAACATACAATTCAA	Reverse Surveyor primer for CR7
Cell-CR10/11-F	GATATGGGCATGTCACTTTCTATAG	Forward Surveyor primer for CR10 or CR11
Cell-CR10/11-R	TGCTGTTGATTAATGGTTGATAGG	Reverse Surveyor primer for CR10 or CR11
Cell-CR12/13-F	TTTTAAATTGCCATGTTGTGTC	Forward Surveyor primer for CR12 or CR13
Cell-CR12/13-R	ATGAATAACCTAATGGGCAGAAAA	Reverse Surveyor primer for CR12 or CR13
Cell-CR14/15-F	TCAAGTCGCTTCATTTTGTATAGAC	Forward Surveyor primer for CR14 or CR15
Cell-CR14/15-R	CACAACAAAAACATATAGCCAAAGC	Reverse Surveyor primer for CR14 or CR15
Cell-CR16/17-F	TGCTGCTAAAATAACACAATCAGT	Forward Surveyor primer for CR16 or CR17
Cell-CR16/17-R	CTGTGCCTATTGTGGTTATCCTCT	Reverse Surveyor primer for CR16 or CR17
Cell-CR18/19-F	ATTGATCTGCAATACATGTGGAGT	Forward Surveyor primer for CR18 or CR19
Cell-CR18/19-R	TTTGCCTCTGCTATTACAGTATGG	Reverse Surveyor primer for CR18 or CR19
Cell-CR20/21-F	TGTAGGGTGGTTGGCTAAAAATAAT	Forward Surveyor primer for CR20 or CR21
Cell-CR20/21-R	TTTTTGCACAGTCAATAACACAAA	Reverse Surveyor primer for CR20 or CR21
Cell-CR22/23-F	GGCTGGTCTCACAAATTGTACTTTA	Forward Surveyor primer for CR22 or CR23
Cell-CR22/23-R	CATTATGGACTGAAAATCTCAGCA	Reverse Surveyor primer for CR22 or CR23
Cell-CR24/25-F	ATCATCCTAGCCATAACACAATGA	Forward Surveyor primer for CR24 or CR25
Cell-CR24/25-R	TTACGCTTTAACGTGATTTTCTGT	Reverse Surveyor primer for CR24 or CR25
Cell-CR26/27-F	GGATTCAGAAGCTGTTTACGAAGT	Forward Surveyor primer for CR26 or CR27
Cell-CR26/27-R	TTTAGCTGGATTGGAAAAACAAAT	Reverse Surveyor primer for CR26 or CR27
Cell-CR28/29-F	AACTCACCCCATTTGGTATATT	Forward Surveyor primer for CR28 or CR29
Cell-CR28/29-R	CCTTGTCCAAATACCGGAATACAT	Reverse Surveyor primer for CR28 or CR29
Cell-CR33-F	CACATAATTCATGAACCTTGGCTTC	Forward Surveyor primer for CR33
Cell-CR33-R	TAGTAGCTGGGGAGGAAGATACAG	Reverse Surveyor primer for CR33
Cell-CR34-F	TTTTTGTTTTAAATTGCGACTGTGT	Forward Surveyor primer for CR34
Cell-CR34-R	AGAAAAGGGGTTTTCTTTTACTT	Reverse Surveyor primer for CR34
Cell-CR35-F	CATTGTGACTGGATGAGAAGAAAC	Forward Surveyor primer for CR35
Cell-CR35-R	AACGGCTGTTATTAAGTCCCTCAG	Reverse Surveyor primer for CR35
Cell-CR36-F	CAAGTCAGAAGTCACTTGTCTTGT	Forward Surveyor primer for CR36
Cell-CR36-R	TTTTATGTGCAGGAATCAGTCTGT	Reverse Surveyor primer for CR36
Dys-E44-F	TGGCGGCGTTTTTCATTAT	Forward RT-PCR primer binding in exon 44
Dys-E52-R	TTCGATCCGTAATGATTGTTCTAGCC	Reverse RT-PCR primer binding in exon 52
Dys-E60-R	GGTCTCCAGAGTGTCTGAGG	Reverse RT-PCR primer binding in exon 60
CR3-Cell-OT1-F	TGTGTGCTTCTGTACACATCATCT	Forward Surveyor primer for CR3 off-target 1
CR3-Cell-OT1-R	AGATTTCAACCCTCAAAAACCTGAG	Reverse Surveyor primer for CR3 off-target 1
CR3-Cell-OT2-F	TAAACTCTTTCTTTTCCGCAATTC	Forward Surveyor primer for CR3 off-target 2
CR3-Cell-OT2-R	CAAGGTGACCTGCTACCTAAAAAT	Reverse Surveyor primer for CR3 off-target 2
CR3-Cell-OT3-F	TATGACCAAGGCTATGTGTTCACT	Forward Surveyor primer for CR3 off-target 3
CR3-Cell-OT3-R	ACAGCCTCTCTCCAGTAACATTCT	Reverse Surveyor primer for CR3 off-target 3
CR3-Cell-OT4-F	TATTCTTGCAAGTGGTTTACATTT	Forward Surveyor primer for CR3 off-target 4
CR3-Cell-OT4-R	ATATTTTAAGCCAAGACCACAA	Reverse Surveyor primer for CR3 off-target 4
CR3-Cell-OT5-F	CTTTCAACTGTCTGTCTGATTGCT	Forward Surveyor primer for CR3 off-target 5
CR3-Cell-OT5-R	AACAGCCTCTCTTCACTTGTCTCT	Reverse Surveyor primer for CR3 off-target 5
CR3-Cell-OT6-F	CTCTGGAACCTGTCTGTCTTGA	Forward Surveyor primer for CR3 off-target 6
CR3-Cell-OT6-R	CTTTCCTGCGTTCTCATGTTACTA	Reverse Surveyor primer for CR3 off-target 6
CR3-Cell-OT7-F	CCTTATATCCGTATCGCTCACTCT	Forward Surveyor primer for CR3 off-target 7
CR3-Cell-OT7-R	CATATCTGTCTAACTTCCGCACAC	Reverse Surveyor primer for CR3 off-target 7
CR3-Cell-OT8-F	ACAGGTGTTATGTTGTCTGCATCT	Forward Surveyor primer for CR3 off-target 8
CR3-Cell-OT8-R	ACTCCATTCCCAGATTAGTTATGC	Reverse Surveyor primer for CR3 off-target 8
CR3-Cell-OT9-F	CTGTTTTCTTTGTGAGAGTGGAGA	Forward Surveyor primer for CR3 off-target 9
CR3-Cell-OT9-R	TGTAAGGTGGTCAAACCTTGCTCTA	Reverse Surveyor primer for CR3 off-target 9
CR3-Cell-OT10-F	TTTTTCCTAGTACCCACAGATTTTT	Forward Surveyor primer for CR3 off-target 10
CR3-Cell-OT10-R	TCCCTGATTCTCTCATTGTGTGTTA	Reverse Surveyor primer for CR3 off-target 10
CR1-Cell-OT1-F	TTGGGAACATCAGAGAAAGTATGA	Forward Surveyor primer for CR1 off-target 1
CR1-Cell-OT1-R	ACAAATTACAGTCTCCTGGGAAAG	Reverse Surveyor primer for CR1 off-target 1
CR1-Cell-OT2-F	AGTAGCTTACCTTGGCAGAGAAAA	Forward Surveyor primer for CR1 off-target 2
CR1-Cell-OT2-R	TGACATACTGTTACCCTTTGCAGT	Reverse Surveyor primer for CR1 off-target 2
CR1-Cell-OT3-F	GAAAGGCTCAGTGAATGTTTGT	Forward Surveyor primer for CR1 off-target 3
CR1-Cell-OT3-R	CACCTGCATCATCTCAATTAATCAA	Reverse Surveyor primer for CR1 off-target 3
CR1-Cell-OT4-F	CCCATATTCATGATTACCCACA	Forward Surveyor primer for CR1 off-target 4
CR1-Cell-OT4-R	TATCAGAACGAGCACTAAAAGCAC	Reverse Surveyor primer for CR1 off-target 4

CR1-Cell-OT5-F	TTGGGAGGCTGAGGTACAAG	Forward Surveyor primer for CR1 off-target 5
CR1-Cell-OT5-R	GAATGAAAAACAACAGAAGGTGA	Reverse Surveyor primer for CR1 off-target 5
CR1-Cell-OT6-F	CTCCTCATCTGTACCCCTCAATCT	Forward Surveyor primer for CR1 off-target 6
CR1-Cell-OT6-R	AGAGTGGCATCTAGTGTCAAGT	Reverse Surveyor primer for CR1 off-target 6
CR1-Cell-OT7-F	TACCAAAAGCTTCTCTGTTTACC	Forward Surveyor primer for CR1 off-target 7
CR1-Cell-OT7-R	GTAAGTTGGATGGCCTATTCTTTG	Reverse Surveyor primer for CR1 off-target 7
CR1-Cell-OT8-F	GAAGGAAATGCAAGGATACAAGAT	Forward Surveyor primer for CR1 off-target 8
CR1-Cell-OT8-R	TGATTGAAAGAATCATTCCAGAAA	Reverse Surveyor primer for CR1 off-target 8
CR1-Cell-OT9-F	TCAGAAGGAAAATTGAAATTGGTT	Forward Surveyor primer for CR1 off-target 9
CR1-Cell-OT9-R	CAGATGTGTTCTTCATCATTCCCT	Reverse Surveyor primer for CR1 off-target 9
CR1-Cell-OT10-F	TTCTCTTAGGGAAAGCTCTCAA	Forward Surveyor primer for CR1 off-target 10
CR1-Cell-OT10-R	GGGTATAGATCATATGGAGGGAA	Reverse Surveyor primer for CR1 off-target 10
CR5-Cell-OT1-F	AGATGATCTGCCACCTCAG	Forward Surveyor primer for CR5 off-target 1
CR5-Cell-OT1-R	CTTTCTTCTCATTAGTGGCAAT	Reverse Surveyor primer for CR5 off-target 1
CR5-Cell-OT2-F	ATGAATTGCAGATTGATGGTACTG	Forward Surveyor primer for CR5 off-target 2
CR5-Cell-OT2-R	TCTCACCAAGAACCAAAATTGTCTA	Reverse Surveyor primer for CR5 off-target 2
CR5-Cell-OT3-F	GTAGGATACCTTGGCAACAGCTT	Forward Surveyor primer for CR5 off-target 3
CR5-Cell-OT3-R	TTAACGAATTGTGAGATTGCTGT	Reverse Surveyor primer for CR5 off-target 3
CR5-Cell-OT4-F	TCAGAAAGTCAAGTAGCACACACA	Forward Surveyor primer for CR5 off-target 4
CR5-Cell-OT4-R	AGAAGCACACACTCAGGTAAAG	Reverse Surveyor primer for CR5 off-target 4
CR5-Cell-OT5-F	TCTTTGGGGGAATAAGACTAAAA	Forward Surveyor primer for CR5 off-target 5
CR5-Cell-OT5-R	TTTGGCATTATGGGAATAAAACT	Reverse Surveyor primer for CR5 off-target 5
CR5-Cell-OT6-F	ACTAATTCTGGTCAAGCCCATCA	Forward Surveyor primer for CR5 off-target 6
CR5-Cell-OT6-R	TTAAGACATCGGATGAACAGAAAG	Reverse Surveyor primer for CR5 off-target 6
CR5-Cell-OT7-F	AGAAGCTTTCTGACATGATCTGC	Forward Surveyor primer for CR5 off-target 7
CR5-Cell-OT7-R	TCAATTGCATTAGGACTTAGACCA	Reverse Surveyor primer for CR5 off-target 7
CR5-Cell-OT8-F	GTTAAATTACCTGTGAAGCCCTTG	Forward Surveyor primer for CR5 off-target 8
CR5-Cell-OT8-R	CGGAAACAGATCCACTTTATGAT	Reverse Surveyor primer for CR5 off-target 8
CR5-Cell-OT9-F	AAATCCACTGGAAACATCTTGAGT	Forward Surveyor primer for CR5 off-target 9
CR5-Cell-OT9-R	AGTCTCTTCAAGATCATGCCCTAT	Reverse Surveyor primer for CR5 off-target 9
CR5-Cell-OT10-F	GCTTGGTGGCACATACCTGTAG	Forward Surveyor primer for CR5 off-target 10
CR5-Cell-OT10-R	GGTAGGTAGATTGCTTGCTTGTT	Reverse Surveyor primer for CR5 off-target 10
CR6-Cell-OT1-F	AGCTCTCAGCAGAGTAGGGATTTA	Forward Surveyor primer for CR6 off-target 1
CR6-Cell-OT1-R	GTGAGTCTACTGCACCCCATC	Reverse Surveyor primer for CR6 off-target 1
CR6-Cell-OT2-F	TGACACTGTGAAGTCAATTCTGTC	Forward Surveyor primer for CR6 off-target 2
CR6-Cell-OT2-R	TCAAGAACTTGACAATGAGCAAAT	Reverse Surveyor primer for CR6 off-target 2
CR6-Cell-OT3-F	TATCCGATCCACTGTTGTGTGT	Forward Surveyor primer for CR6 off-target 3
CR6-Cell-OT3-R	CAGGAGACCCAAAACCACTTAC	Reverse Surveyor primer for CR6 off-target 3
CR6-Cell-OT4-F	TTGTTCTACAAATAGGGCTTCCTT	Forward Surveyor primer for CR6 off-target 4
CR6-Cell-OT4-R	TGTTAAGTTTGGGCTTATGTTCCCT	Reverse Surveyor primer for CR6 off-target 4
CR6-Cell-OT5-F	CACAAGTCTCACTGCACAACAT	Forward Surveyor primer for CR6 off-target 5
CR6-Cell-OT5-R	TGACCCATGATTATCTCTCTTTGA	Reverse Surveyor primer for CR6 off-target 5
CR6-Cell-OT6-F	TTCAGCTTCTGATTGGTTTTAATG	Forward Surveyor primer for CR6 off-target 6
CR6-Cell-OT6-R	CCAATTCCTAATTTCCCTACAG	Reverse Surveyor primer for CR6 off-target 6
CR6-Cell-OT7-F	ATCTCAGACCAGGAGGGAGAC	Forward Surveyor primer for CR6 off-target 7
CR6-Cell-OT7-R	CCTCAGGGTCAGTACATTTTCAG	Reverse Surveyor primer for CR6 off-target 7
CR6-Cell-OT8-F	TTCTTAGGACATTGCTCCACATAC	Forward Surveyor primer for CR6 off-target 8
CR6-Cell-OT8-R	GCAAACATAATGCAACTCGTAATC	Reverse Surveyor primer for CR6 off-target 8
CR6-Cell-OT9-F	GCAAGGGAGTCTGTGCTTTTG	Forward Surveyor primer for CR6 off-target 9
CR6-Cell-OT9-R	TCATTTAAGTGGCTGTTCTGTGTT	Reverse Surveyor primer for CR6 off-target 9
CR6-Cell-OT10-F	ACAAAACAGAGAGAAAAGGCAGAG	Forward Surveyor primer for CR6 off-target 10
CR6-Cell-OT10-R	GTTTTGATTTCTGGTGCCTACAG	Reverse Surveyor primer for CR6 off-target 10
CR36-Cell-OT1-F	ACTGAAGCTGAAGCCAGTC	Forward Surveyor primer for CR36 off-target 1
CR36-Cell-OT1-R	ACATGAGCTCTCAGGTTTCTGAC	Reverse Surveyor primer for CR36 off-target 1
CR36-Cell-OT2-F	TCAAACCTTAGATGGTCCCTATGTT	Forward Surveyor primer for CR36 off-target 2
CR36-Cell-OT2-R	GTACCCTGAAAATGTAGGGTGACT	Reverse Surveyor primer for CR36 off-target 2
CR36-Cell-OT3-F	CACCTCCCAAGTGAGGCAAT	Forward Surveyor primer for CR36 off-target 3
CR36-Cell-OT3-R	CTATACTTGGGGCTGACTTGCTAC	Reverse Surveyor primer for CR36 off-target 3
CR36-Cell-OT4-F	TCGTATAGGTTACTTTGGCTCAC	Forward Surveyor primer for CR36 off-target 4
CR36-Cell-OT4-R	AGGGATCTTACTCCTCAGTGTGT	Reverse Surveyor primer for CR36 off-target 4
CR36-Cell-OT5-F	TGTAGAAGTTGGAATATCCTGCTG	Forward Surveyor primer for CR36 off-target 5
CR36-Cell-OT5-R	GTCAACAATTTGATCTCAGGCTTC	Reverse Surveyor primer for CR36 off-target 5
CR36-Cell-OT6-F	CTCAGTACTAAAGATGGACGCTTG	Forward Surveyor primer for CR36 off-target 6
CR36-Cell-OT6-R	AATCATTTCACTTCCCAACAAT	Reverse Surveyor primer for CR36 off-target 6
CR36-Cell-OT7-F	GGGAATCACAGTAGATGTTGTCA	Forward Surveyor primer for CR36 off-target 7
CR36-Cell-OT7-R	AGACCAGGAGGTAAGAACATTTTG	Reverse Surveyor primer for CR36 off-target 7
CR36-Cell-OT8-F	CCACATAGAAAGAGACTTGCAGAA	Forward Surveyor primer for CR36 off-target 8
CR36-Cell-OT8-R	AGAGATGCCAAAAGAACAGTCAAT	Reverse Surveyor primer for CR36 off-target 8
CR36-Cell-OT9-F	TGTGCCCTTAGGCTATGTAACCTGT	Forward Surveyor primer for CR36 off-target 9
CR36-Cell-OT9-R	AAACCCTTGTAAACAAAATTACCA	Reverse Surveyor primer for CR36 off-target 9
CR36-Cell-OT10-F	TAACATGCATCAGAAGTCTTGTCTA	Forward Surveyor primer for CR36 off-target 10
CR36-Cell-OT10-R	GGAGACCAAGCTGCTAAAGTCA	Reverse Surveyor primer for CR36 off-target 10
Cell-CR3-F-nested	GTGGTGccgqggGAGTTTGGCTCAAATTGTTACTCT T	Nested PCR first round primers
Cell-CR3-R-nested	GTGGTGccgqggGGGAAATGGTCTAGGAGAGTAAA	Nested PCR first round primers

	GT	
Cell-CR1-F-nested	GTGGTGccgchgGAGAGTTATGTGGCTTACCA	Nested PCR first round primers
Cell-CR1-R-nested	GTGGTGccgchgCTCATTCTCATGCCTGGACA	Nested PCR first round primers
Cell-CR5-F-nested	GTGGTGccgchgCGGGCTTGACAGAACTTAC	Nested PCR first round primers
Cell-CR5-R-nested	GTGGTGccgchgCTGCGTAGTGC AAAACAAA	Nested PCR first round primers
Cell-CR6-F-nested	GTGGTGccgchgTAATTTCAATGAAGATGGCTGAA	Nested PCR first round primers
Cell-CR6-R-nested	GTGGTGccgchgAAGCCCTGTGGTAGTAGTCAAG T	Nested PCR first round primers
Cell-CR36-F-nested	GTGGTGccgchgCAAGTCAGAAGTCACTTGCTTTGT	Nested PCR first round primers
Cell-CR36-R-nested	GTGGTGccgchgTTTTATGTGCAGGAATCAGTCTGT	Nested PCR first round primers
CR3-Cell-OT1-F-nested	GTGGTGccgchgTGTGTGCTTCTGTACACATCATCT	Nested PCR first round primers
CR3-Cell-OT1-R-nested	GTGGTGccgchgAGATTTCAACCC TAAAACTGAG	Nested PCR first round primers
CR1-Cell-OT1-F-nested	GTGGTGccgchgTTGGGAACATCAGAGAAAGTATGA	Nested PCR first round primers
CR1-Cell-OT1-R-nested	GTGGTGccgchgACAAATTACAGTCTCCTGGGAAAG	Nested PCR first round primers
CR36-Cell-OT3-F-nested	GTGGTGccgchgCACTTCCCAAGTGAGGCAAT	Nested PCR first round primers
CR36-Cell-OT3-R-nested	GTGGTGccgchgCTATACTGGGGCTGACTTGCTAC	Nested PCR first round primers
CR3-P1/P3-F	GTGGTGccgchgTTGGCTCTTTAGCTTGTGTTTT	Nested PCR second round primers
CR3-P1/P3-R	GTGGTGccgchgTGAGACTCCAAAGGCAATC	Nested PCR second round primers
CR3-P1/P4-F	GTGGTGccgchgTTGGCTCTTTAGCTTGTGTTTT	Nested PCR second round primers
CR3-P1/P4-R	GTGGTGccgchgACTGAGGGGTGATCTTGGTG	Nested PCR second round primers
CR3-P2/P3-F	GTGGTGccgchgGCAGAGAAAGCCAGTCGGTA	Nested PCR second round primers
CR3-P2/P3-R	GTGGTGccgchgTGAGACTCCAAAGGCAATC	Nested PCR second round primers
CR3-P2/P4-F	GTGGTGccgchgGCAGAGAAAGCCAGTCGGTA	Nested PCR second round primers
CR3-P2/P4-R	GTGGTGccgchgACTGAGGGGTGATCTTGGTG	Nested PCR second round primers
CR1-P1/P5-F	GTGGTGccgchgCCAGAGTTCTAGGGCAGAG	Nested PCR second round primers
CR1-P1/P5-R	GTGGTGccgchgAGCTAGTCCCACATTCCAC	Nested PCR second round primers
CR1-P1/P6-F	GTGGTGccgchgCCAGAGTTCTAGGGCAGAG	Nested PCR second round primers
CR1-P1/P6-R	GTGGTGccgchgGGTGGAGGGAAACTTTAGGC	Nested PCR second round primers
CR1-P2/P5-F	GTGGTGccgchgCTCATTCTCATGCCTGGACA	Nested PCR second round primers
CR1-P2/P5-R	GTGGTGccgchgAGCTAGTCCCACATTCCAC	Nested PCR second round primers
CR1-P2/P6-F	GTGGTGccgchgTCTCATGCCTGGACAAGTAACT	Nested PCR second round primers
CR1-P2/P6-R	GTGGTGccgchgGGTGGAGGGAAACTTTAGGC	Nested PCR second round primers
CR5-P3/P5-F	GTGGTGccgchgGGCTTGACAGAACTTACCG	Nested PCR second round primers
CR5-P3/P5-R	GTGGTGccgchgCACCACTGTCTGCCTAAGGA	Nested PCR second round primers
CR5-P4/P6-F	GTGGTGccgchgGGCTTGACAGAACTTACCG	Nested PCR second round primers
CR5-P4/P6-R	GTGGTGccgchgGGTGGAGGGAAACTTTAGGC	Nested PCR second round primers
CR5-P3/P5-F	GTGGTGccgchgCGTAGTGCCAAAACAAACAGT	Nested PCR second round primers
CR5-P3/P5-R	GTGGTGccgchgCACCACTGTCTGCCTAAGGA	Nested PCR second round primers
CR5-P4/P6-F	GTGGTGccgchgCGTAGTGCCAAAACAAACAGT	Nested PCR second round primers
CR5-P4/P6-R	GTGGTGccgchgGGTGGAGGGAAACTTTAGGC	Nested PCR second round primers
CR6-P1/P5-F	GTGGTGccgchgGCGAGGGCCTACTTGATATG	Nested PCR second round primers
CR6-P1/P5-R	GTGGTGccgchgCTTCCCAAGTGAGGCAATGC	Nested PCR second round primers
CR6-P1/P6-F	GTGGTGccgchgACGTTTTGTGCTGCTGTAACA	Nested PCR second round primers
CR6-P1/P6-R	GTGGTGccgchgCTGCAGGCACATTCTTTCC	Nested PCR second round primers
CR6-P2/P5-F	GTGGTGccgchgGCCCTGTGTGGTAGTAGTCA	Nested PCR second round primers
CR6-P2/P5-R	GTGGTGccgchgCTTCCCAAGTGAGGCAATGC	Nested PCR second round primers
CR6-P2/P6-F	GTGGTGccgchgCAGTATTAAGGGGTGGGAGCT	Nested PCR second round primers
CR6-P2/P6-R	GTGGTGccgchgTCTCTTCTCACACAGCTGA	Nested PCR second round primers
CR36-P3/P5-F	GTGGTGccgchgGGAGCTTGAGGGGAAGAGAA	Nested PCR second round primers
CR36-P3/P5-R	GTGGTGccgchgCTTCCCAAGTGAGGCAATGC	Nested PCR second round primers
CR36-P4/P6-F	GTGGTGccgchgATGGATGGGGAAGACTGG	Nested PCR second round primers
CR36-P4/P6-R	GTGGTGccgchgCTGCAGGCACATTCTTTCC	Nested PCR second round primers
CR36-P3/P5-F	GTGGTGccgchgGGATGAAACAGGGCAGGAAC	Nested PCR second round primers
CR36-P3/P5-R	GTGGTGccgchgTTCCCAAGTGAGGCAATGC	Nested PCR second round primers
CR36-P4/P6-F	GTGGTGccgchgTTGCGAGGCCATGATGAGG	Nested PCR second round primers
CR36-P4/P6-R	GTGGTGccgchgCGACAGCCAAAACAGCCG	Nested PCR second round primers

**Supplementary Table 6:** Sequences of primers used to amplify targets for deep sequencing.

DCR1-ON-miseq-F	TCGTCGGCAGCGTCAGATGTGTATAAGAGACAGTGGCCAGTTTACTAACAATCTGAA
DCR1-ON-miseq-R	GTCTCGTGGGCTCGGAGATGTGTATAAGAGACAGTTTCTGATTTAAAATCCCTTGAA
DCR1-OT1-miseq-F	TCGTCGGCAGCGTCAGATGTGTATAAGAGACAGATATCTGTGGCTTGATTTTCCTC
DCR1-OT1-miseq-R	GTCTCGTGGGCTCGGAGATGTGTATAAGAGACAGGAACCTGTTTGAAGCCTGATATTT
DCR1-OT2-miseq-F	TCGTCGGCAGCGTCAGATGTGTATAAGAGACAGACTCAGAATTTAAAAGGGGAAGGT
DCR1-OT2-miseq-R	GTCTCGTGGGCTCGGAGATGTGTATAAGAGACAGCTCAAAGCTGAAAGACCCTCTAAG
DCR1-OT3-miseq-F	TCGTCGGCAGCGTCAGATGTGTATAAGAGACAGGACACAGCTAGACTCCATCTCAA
DCR1-OT3-miseq-R	GTCTCGTGGGCTCGGAGATGTGTATAAGAGACAGATCAAGTCAGAAGTGAGCTCTGG
DCR1-OT4-miseq-F	TCGTCGGCAGCGTCAGATGTGTATAAGAGACAGATATGTTGTTCTCTGCTCATCCTG
DCR1-OT4-miseq-R	GTCTCGTGGGCTCGGAGATGTGTATAAGAGACAGCATGAGTGACAGCTCTGAAACC
DCR1-OT5-miseq-F	TCGTCGGCAGCGTCAGATGTGTATAAGAGACAGAGCTTGAAAGATTGAGCATAAA
DCR1-OT5-miseq-R	GTCTCGTGGGCTCGGAGATGTGTATAAGAGACAGAGATTACTCACTGCCATTTAACGA
DCR1-OT6-miseq-F	TCGTCGGCAGCGTCAGATGTGTATAAGAGACAGATACTGGTAGGGGATGCTGGAAG
DCR1-OT6-miseq-R	GTCTCGTGGGCTCGGAGATGTGTATAAGAGACAGACATTTTCTTGTCTGCTTTATCA
DCR1-OT7-miseq-F	TCGTCGGCAGCGTCAGATGTGTATAAGAGACAGATAATGTCTGGTCATACCCTTGGT
DCR1-OT7-miseq-R	GTCTCGTGGGCTCGGAGATGTGTATAAGAGACAGGGCAGTTTCTCCTCTACTCTTAGC
DCR1-OT8-miseq-F	TCGTCGGCAGCGTCAGATGTGTATAAGAGACAGTGACAAAGAGGCTAAAAACAACG
DCR1-OT8-miseq-R	GTCTCGTGGGCTCGGAGATGTGTATAAGAGACAGATCATTTTTCTTTGACCTGAAAT
DCR1-OT9-miseq-F	TCGTCGGCAGCGTCAGATGTGTATAAGAGACAGCAAATGAACATCTCTGTCTCCAAG
DCR1-OT9-miseq-R	GTCTCGTGGGCTCGGAGATGTGTATAAGAGACAGAGAATTGGGGTGATCCATCACT
DCR1-OT10-miseq-F	TCGTCGGCAGCGTCAGATGTGTATAAGAGACAGCTTTTTCCAGTGTATGTGAGATGC
DCR1-OT10-miseq-R	GTCTCGTGGGCTCGGAGATGTGTATAAGAGACAGTGGAGGGAAGAGTAGACATAGTGA
DCR3-ON-miseq-F	TCGTCGGCAGCGTCAGATGTGTATAAGAGACAGAAATGGCTCTTTAGCTTGTGTTTC
DCR3-ON-miseq-R	GTCTCGTGGGCTCGGAGATGTGTATAAGAGACAGATTTCTAGTTTGGAGATGGCAGTT
DCR3-OT1-miseq-F	TCGTCGGCAGCGTCAGATGTGTATAAGAGACAGAAATCCAGGGTCAAGTGACTTACTA
DCR3-OT1-miseq-R	GTCTCGTGGGCTCGGAGATGTGTATAAGAGACAGGTGTACACAAGAAGGTGGGAGTC
DCR3-OT2-miseq-F	TCGTCGGCAGCGTCAGATGTGTATAAGAGACAGAGCTAATGGCAGTGTCTATGGAA
DCR3-OT2-miseq-R	GTCTCGTGGGCTCGGAGATGTGTATAAGAGACAGGGCTCTTACCTGCCTACTGTTA
DCR3-OT3-miseq-F	TCGTCGGCAGCGTCAGATGTGTATAAGAGACAGTAGTATCCAAGCACATTTCTCCAG
DCR3-OT3-miseq-R	GTCTCGTGGGCTCGGAGATGTGTATAAGAGACAGCATCCTGTTTTAAATCGCTCTTTT
DCR3-OT4-miseq-F	TCGTCGGCAGCGTCAGATGTGTATAAGAGACAGCACAAACATTTGGCTCATTTTATTT
DCR3-OT4-miseq-R	GTCTCGTGGGCTCGGAGATGTGTATAAGAGACAGAGAATTGTGTAAACCCAGGAGGT
DCR3-OT5-miseq-F	TCGTCGGCAGCGTCAGATGTGTATAAGAGACAGGcaacatacagagatatgtggtacaaa
DCR3-OT5-miseq-R	GTCTCGTGGGCTCGGAGATGTGTATAAGAGACAGTgcttaggatttctgtttgacttc
DCR3-OT6-miseq-F	TCGTCGGCAGCGTCAGATGTGTATAAGAGACAGTTAGCTGTGATAGAAATCCCTTGG
DCR3-OT6-miseq-R	GTCTCGTGGGCTCGGAGATGTGTATAAGAGACAGAAATTTGTGGATCAAAGTGGGTAT
DCR3-OT7-miseq-F	TCGTCGGCAGCGTCAGATGTGTATAAGAGACAGATACACACCACAGGGCATACTTT
DCR3-OT7-miseq-R	GTCTCGTGGGCTCGGAGATGTGTATAAGAGACAGAGGGTGAGTGAATGAGCTATTTG
DCR3-OT8-miseq-F	TCGTCGGCAGCGTCAGATGTGTATAAGAGACAGGGTTTCAGCTCAAAGCAGAACTA
DCR3-OT8-miseq-R	GTCTCGTGGGCTCGGAGATGTGTATAAGAGACAGAAATGACACCTTTCTGATGGTCTTT

DCR3-OT9-miseq-F	TCGTCGGCAGCGTCAGATGTGTATAAGAGACAGCATATCTGCATTTGGTCTTCAGTC
DCR3-OT9-miseq-R	GTCTCGTGGGCTCGGAGATGTGTATAAGAGACAGAGACCTGGTTCAAAAAGATTCTG
DCR3-OT10-miseq-F	TCGTCGGCAGCGTCAGATGTGTATAAGAGACAGTAGGCTAGTGTATTCCCAAAGAG
DCR3-OT10-miseq-R	GTCTCGTGGGCTCGGAGATGTGTATAAGAGACAGTAACAAAACCTGTATTTCCCTTCC
DCR5-ON-miseq-F	TCGTCGGCAGCGTCAGATGTGTATAAGAGACAGATGAAGATTTCCACCAATCACTT
DCR5-ON-miseq-R	GTCTCGTGGGCTCGGAGATGTGTATAAGAGACAGATGGCTACTTTTGTATTTCATT
DCR5-OT1-miseq-F	TCGTCGGCAGCGTCAGATGTGTATAAGAGACAGATACTCACTGTGCTAGCCACTACC
DCR5-OT1-miseq-R	GTCTCGTGGGCTCGGAGATGTGTATAAGAGACAGTTGTGGAGGAGATTCTATTGAC
DCR5-OT2-miseq-F	TCGTCGGCAGCGTCAGATGTGTATAAGAGACAGTATAGCTAATCCCCTTGCAACCT
DCR5-OT2-miseq-R	GTCTCGTGGGCTCGGAGATGTGTATAAGAGACAGTAGAAGAAAGGGAGAAACGGACAG
DCR5-OT3-miseq-F	TCGTCGGCAGCGTCAGATGTGTATAAGAGACAGAGTGTGCTGGACATTTAAACCAT
DCR5-OT3-miseq-R	GTCTCGTGGGCTCGGAGATGTGTATAAGAGACAGGGAACTTTTATTGGAACATGGAGT
DCR5-OT4-miseq-F	TCGTCGGCAGCGTCAGATGTGTATAAGAGACAGCAAGGGCTTATTAATGGAGCTTA
DCR5-OT4-miseq-R	GTCTCGTGGGCTCGGAGATGTGTATAAGAGACAGCGAGTCTCATCCACATCTTAGC
DCR5-OT5-miseq-F	TCGTCGGCAGCGTCAGATGTGTATAAGAGACAGCCATCTACCTACTTCTTTTGTGG
DCR5-OT5-miseq-R	GTCTCGTGGGCTCGGAGATGTGTATAAGAGACAGGACTGTAGCTGTCAAATGAGGATG
DCR5-OT6-miseq-F	TCGTCGGCAGCGTCAGATGTGTATAAGAGACAGcaggggaacggattatgtgat
DCR5-OT6-miseq-R	GTCTCGTGGGCTCGGAGATGTGTATAAGAGACAGGtaagacatcggatgaacagaaag
DCR5-OT7-miseq-F	TCGTCGGCAGCGTCAGATGTGTATAAGAGACAGCCACACAAGATGCAGATGTTAAT
DCR5-OT7-miseq-R	GTCTCGTGGGCTCGGAGATGTGTATAAGAGACAGCTAATCAAAGCCACCCTGTACTT
DCR5-OT8-miseq-F	TCGTCGGCAGCGTCAGATGTGTATAAGAGACAGCCAGAGCCTCATTCTATGGATACT
DCR5-OT8-miseq-R	GTCTCGTGGGCTCGGAGATGTGTATAAGAGACAGAAACGGAAAACAGATCCACTTTAT
DCR5-OT9-miseq-F	TCGTCGGCAGCGTCAGATGTGTATAAGAGACAGCATCTGAGGAACTCAGCCTGTC
DCR5-OT9-miseq-R	GTCTCGTGGGCTCGGAGATGTGTATAAGAGACAGATGAAGGAACAGGGTGTGGTGT
DCR5-OT10-miseq-F	TCGTCGGCAGCGTCAGATGTGTATAAGAGACAGTAACCCATATGCCTACACACAATC
DCR5-OT10-miseq-R	GTCTCGTGGGCTCGGAGATGTGTATAAGAGACAGACACAGTGCAGAAGTAAAAGGT
DCR6-ON-miseq-F	TCGTCGGCAGCGTCAGATGTGTATAAGAGACAGGATTAGAGGGCAAGAAAGATCAAA
DCR6-ON-miseq-R	GTCTCGTGGGCTCGGAGATGTGTATAAGAGACAGGAAATTAATTGCCATTGTGACAG
DCR6-OT1-miseq-F	TCGTCGGCAGCGTCAGATGTGTATAAGAGACAGAGTTAGATGCAAGTGAGACGTCAG
DCR6-OT1-miseq-R	GTCTCGTGGGCTCGGAGATGTGTATAAGAGACAGCTGTCTGGAATTTGCCTTAAAAA
DCR6-OT2-miseq-F	TCGTCGGCAGCGTCAGATGTGTATAAGAGACAGTTTGTTCCTGCTGTAGAAGAGAGA
DCR6-OT2-miseq-R	GTCTCGTGGGCTCGGAGATGTGTATAAGAGACAGCACTGTTTCACAGGATTATTGCTT
DCR6-OT3-miseq-F	TCGTCGGCAGCGTCAGATGTGTATAAGAGACAGACTGCAGCGTTTTCTTTCTTTCT
DCR6-OT3-miseq-R	GTCTCGTGGGCTCGGAGATGTGTATAAGAGACAGCATCCTTCTAGGGGGTTTAGTCAG
DCR6-OT4-miseq-F	TCGTCGGCAGCGTCAGATGTGTATAAGAGACAGGTCCTCTCTGTCCAAGCTCTGT
DCR6-OT4-miseq-R	GTCTCGTGGGCTCGGAGATGTGTATAAGAGACAGTGTCAAGCTGCTGGTTGACTT
DCR6-OT5-miseq-F	TCGTCGGCAGCGTCAGATGTGTATAAGAGACAGGAGGAAGGAAAGCTGCCTCTAGT
DCR6-OT5-miseq-R	GTCTCGTGGGCTCGGAGATGTGTATAAGAGACAGCACCTTCTTTCTCTCTGAGTGT
DCR6-OT6-miseq-F	TCGTCGGCAGCGTCAGATGTGTATAAGAGACAGtttttctgtggtggaacacct
DCR6-OT6-miseq-R	GTCTCGTGGGCTCGGAGATGTGTATAAGAGACAGagcctgtgtaaacaaaccagagt
DCR6-OT7-miseq-F	TCGTCGGCAGCGTCAGATGTGTATAAGAGACAGctttttgatgtcctgagtgtgaac



DCR6-OT7-miseq-R	GTCTCGTGGGCTCGGAGATGTGTATAAGAGACAGtgaccaccctctgctgttaag
DCR6-OT8-miseq-F	TCGTCGGCAGCGTCAGATGTGTATAAGAGACAGGGGACACTGAAGGGGAATGTTACTG
DCR6-OT8-miseq-R	GTCTCGTGGGCTCGGAGATGTGTATAAGAGACAGCTCATACCAACAGACACAGATTT
DCR6-OT9-miseq-F	TCGTCGGCAGCGTCAGATGTGTATAAGAGACAGAaatggatggtgtgctctgt
DCR6-OT9-miseq-R	GTCTCGTGGGCTCGGAGATGTGTATAAGAGACAGgttctgtgtttcttggtgag
DCR6-OT10-miseq-F	TCGTCGGCAGCGTCAGATGTGTATAAGAGACAGcagggtacccaagctagtgtgagtc
DCR6-OT10-miseq-R	GTCTCGTGGGCTCGGAGATGTGTATAAGAGACAGAactaaaccaaggttctctgcac
DCR36-ON-miseq-F	TCGTCGGCAGCGTCAGATGTGTATAAGAGACAGatctatgcttaaccctgctctg
DCR36-ON-miseq-R	GTCTCGTGGGCTCGGAGATGTGTATAAGAGACAGcagccctataaatcctttacacc
DCR36-OT1-miseq-F	TCGTCGGCAGCGTCAGATGTGTATAAGAGACAGagtgtgctgtgaggctgagcac
DCR36-OT1-miseq-R	GTCTCGTGGGCTCGGAGATGTGTATAAGAGACAGacatgagctctcaggttctgac
DCR36-OT2-miseq-F	TCGTCGGCAGCGTCAGATGTGTATAAGAGACAGcagctaggctggtgtcttctt
DCR36-OT2-miseq-R	GTCTCGTGGGCTCGGAGATGTGTATAAGAGACAGagtttttgaagctccagttcag
DCR36-OT3-miseq-F	TCGTCGGCAGCGTCAGATGTGTATAAGAGACAGtaatgtgagtcagctgaaatatcc
DCR36-OT3-miseq-R	GTCTCGTGGGCTCGGAGATGTGTATAAGAGACAGctatactggggctgacttgctac
DCR36-OT4-miseq-F	TCGTCGGCAGCGTCAGATGTGTATAAGAGACAGTGCCAAATCAATTCACACTTTT
DCR36-OT4-miseq-R	GTCTCGTGGGCTCGGAGATGTGTATAAGAGACAGAGTGAAAATATTGGGTTTGTCTC
DCR36-OT5-miseq-F	TCGTCGGCAGCGTCAGATGTGTATAAGAGACAGacaggtcaattggctggtttct
DCR36-OT5-miseq-R	GTCTCGTGGGCTCGGAGATGTGTATAAGAGACAGaggactgaaaacatcccagcag
DCR36-OT6-miseq-F	TCGTCGGCAGCGTCAGATGTGTATAAGAGACAGagtgtgtaggtccagcaaatga
DCR36-OT6-miseq-R	GTCTCGTGGGCTCGGAGATGTGTATAAGAGACAGAaacaatttcagactcccaaatcc
DCR36-OT7-miseq-F	TCGTCGGCAGCGTCAGATGTGTATAAGAGACAGattttaccagcacaggtcaagc
DCR36-OT7-miseq-R	GTCTCGTGGGCTCGGAGATGTGTATAAGAGACAGataagccaggagacaatcacctaa
DCR36-OT8-miseq-F	TCGTCGGCAGCGTCAGATGTGTATAAGAGACAGaggaagagtaagtcaccatcctg
DCR36-OT8-miseq-R	GTCTCGTGGGCTCGGAGATGTGTATAAGAGACAGAaggaggacaaaatattggaagc
DCR36-OT9-miseq-F	TCGTCGGCAGCGTCAGATGTGTATAAGAGACAGTTTCAAATGAGGAAACAAGATCAA
DCR36-OT9-miseq-R	GTCTCGTGGGCTCGGAGATGTGTATAAGAGACAGAACAAGGAGAAAACAAGATTTCG
DCR36-OT10-miseq-F	TCGTCGGCAGCGTCAGATGTGTATAAGAGACAGactatctaaattaaacgggcaca
DCR36-OT10-miseq-R	GTCTCGTGGGCTCGGAGATGTGTATAAGAGACAGacgcacatcttctcaagtgct