Table 1. Phenotype and viabilty of *Tyr* edited zygotes and mice by CRISPR-EZ

Strain	Genome Editing Method	Zygotes Electroporated	Zygotes Recovered After Electroporation	Zygotes Transferred[a]	Mice Born	Viability	Genotyping[b]		
							No Mutation	HDR	Indel
B6N	2 pulses	30	30	10	5	50	0	0	5 (100%)
B6N	6 pulses	40	22	22	6	27.2727	0	1 (17%)	6 (100%)
B6J	4 pulses	35	29	29	15	51.7241	5 (33%)	1 (7%)	10 (67%)
B6J	6 pulses	35	34	34	16	47.0588	0	10 (62.5%)	16 (100%)
B6J	8 pulses	35	30	29	12	41.3793	0	6 (50%)	12 (100%)
B6J	4 pulses	100[c]	80	48	26	54.1667	3 (12%)	14 (62%)	23 (88%)

a) Number of Zygotes transferred to psuedopregnant females after electroporation.

b) HDR and an Indel events are not mutually exclusive.

c) 100 Zygotes were electroporated in a single cuvette

Table 2. Results of CRISPR-EZ and Microinjection Deletion Experiments.

Gene[a]	Method	Date of Electroporation or Microinjection	Number of sgRNAs Delivered	Zygotes Injected[b] or Loaded into Single Cuvette[c]	Zygotes Recovered[d]	Zygotes Transferred[e]	Pups Born	Viability (%)	Edited Pups[f]	Edited Pups (%)
Cfap57	CRISPR-EZ	3/22/17	4	50	49	40	4	10.0	4	100.0
Clcnkb	CRISPR-EZ	1/18/17	4	60	58	40	14	35.0	8	57.1
Cndp2	CRISPR-EZ	1/23/17	4	62	50	40	6	15.0	4	66.7
Ddx6	CRISPR-EZ	12/14/16	4	70	64	40	20	50.0	5	25.0
Fubp1	CRISPR-EZ	1/23/17	4	60	48	35	6	17.1	3	50.0
Gsg1l	CRISPR-EZ	12/5/16	4	70	45	44	7	15.9	3	42.9
Sfmbt2	CRISPR-EZ	12/5/16	4	70	55	44	29	65.9	3	10.3
Sh3rf2	CRISPR-EZ	1/11/17	2	60	51	40	17	42.5	4	23.5
Tuba1a	CRISPR-EZ	1/11/17	4	60	52	40	14	35.0	0	0.0
Unc5cl	CRISPR-EZ	9/28/16	4	60	49	40	8	20.0	6	75.0
Copb1	CRISPR-EZ	9/28/16	4	43	41	30	6	20.0	1	16.7
Kpna2	CRISPR-EZ	9/29/16	4	89	62	40	11	27.5	2	18.2
Ocel1	CRISPR-EZ	10/7/16	4	45	35	36	24	66.7	0	0.0
Slc25a18	CRISPR-EZ	10/7/16	4	44	33	33	16	48.5	1	6.3
Ipo7	CRISPR-EZ	10/7/16	4	50	36	36	13	36.1	8	61.5
Xpo5	CRISPR-EZ	10/10/16	4	56	50	40	12	30.0	8	66.7
Mcts1	CRISPR-EZ	10/10/16	4	53	50	40	12	30.0	3	25.0
Wdr82	CRISPR-EZ	10/11/16	4	66	52	40	11	27.5	1	9.1
Cyp4v3	CRISPR-EZ	10/11/16	4	63	41	40	8	20.0	6	75.0
Cdhr2	CRISPR-EZ	12/14/16	4	72	65	40	8	20.0	0	0.0
Eif3i	CRISPR-EZ	12/14/16	4	72	63	40	3	7.5	0	0.0
Cfap57	Microinjection	1/5/17	4	50	36	36	6	16.7	0	0.0
Clcnkb	Microinjection	8/15/16	3	65	50	50*	9	18.0	0	0.0
Cndp2	Microinjection	8/22/16	4	48	36	34	3	8.8	0	0.0
Ddx6	Microinjection	7/11/16	4	50	37	37	6	16.2	0	0.0
Fubp1	Microinjection	8/22/16	4	42	35	34	4	11.8	0	0.0
Gsg1l	Microinjection	10/17/16	4	65	40	40	22	55.0	0	0.0
Sfmbt2	Microinjection	10/24/16	4	45	35	35	9	25.7	0	0.0
Sh3rf2	Microinjection	5/16/16	4	55	40	40	29	72.5	1	3.4
Tuba1a	Microinjection	4/18/16	4	76	60	60*	5	8.3	1	20.0
Cand1	Microinjection	10/12/16	4	58	40	40	9	22.5	1	11.1
Slc22a16	Microinjection	10/12/16	4	63	51	40	21	52.5	0	0.0
Ubac2	Microinjection	10/17/16	4	70	40	40	13	32.5	0	0.0
Map3k13	Microinjection	10/18/16	4	50	35	35	18	51.4	5	27.8
Slitrk2	Microinjection	10/18/16	4	50	40	40	18	45.0	1	5.6
Csmd3	Microinjection	10/19/16	4	100	92	80**	22	27.5	4	18.2
Fam132a	Microinjection	10/19/16	4	40	35	35	11	31.4	0	0.0
Maged2	Microinjection	10/19/16	4	35	30	30	8	26.7	0	0.0
Marveld3	Microinjection	10/20/16	4	59	48	40	14	35.0	0	0.0
Naa10	Microinjection	10/20/16	4	58	50	40	10	25.0	1	10.0
Serhl	Microinjection	10/20/16	4	49	40	40	8	20.0	0	0.0
Tlk2	Microinjection	10/24/16	4	70	41	40	13	32.5	1	7.7
Cdc42ep3	Microinjection	10/25/16	4	55	45	40	17	42.5	4	23.5
Magohb	Microinjection	10/25/16	4	70	44	40	10	25.0	0	0.0
1700034E13Rik	Microinjection	12/8/16	4	60	42	40	14	35.0	3	21.4
2810474O19Rik	Microinjection	12/8/16	4	90	56	55*	11	20.0	3	27.3
4833420G17Rik	Microinjection	12/9/16	4	50	45	40	12	30.0	1	8.3
8030462N17Rik	Microinjection	12/9/16	4	80	68	60*	5	8.3	0	0.0

a) Gene names highlighted in grey were involved in direct comparisons between CRISPR-EZ and Microinjection.

b) All zygotes from each electroporation experiment were loaded into the same cuvette. Conditions across all procedures were 8uM Cas9 Protein, 6 pulses at 30V with 3ms pulse intervals.

c) All zygotes from each experiment were individually injected with a cocktail of up to 4 sgRNAs and injection buffer.100ng/µL Cas9, 20ng/µL Each sgRNA.

d) Zygote recovery and survival was based on visual cues. Those that appeared lysed were discarded.

e) For the majority of experiments, embryos were transferred to two recipient females each, with approximately 20 embryos per female.

*) Instead of 2 recipient females, 3 were used.

**) Instead of 2 recipient females, 4 were used.

f) "Edited" is defined by presence of desired PCR amplicon. Animals may be Heterozygous or Mosaic.

Table 3. Sequences and expected editing results of sgRNAs used in Electroporation Experiments.

Gene[a]	Fwd Primer	Rev Primer	5'gRNA-1	5'gRNA-2	3'gRNA-1	3'gRNA-2	Targeted exon for deletion	Unedited amplicon Size (bp)	Predicted deletion size (bp)[b]
Unc5cl	cttcagacagcaggttagggtacc	cacactcaagaaccatgcaattgag	gggtcatcgctactcgtttg	aggccaccgagagctaactg	agcatgctaaatgaatgaag	agaacagtgggctcagagag	3	1214	580-684
Copb1	ccagcctcccctctagaatttttg	ctgaatccatgctcacacactctagg	tggaattccaactgttcaga	ggcagcttaggcccctgtcc	gaacttagacgacacaccac	gtagaaaagggttggggatg	3,4	3323	2,508-2,672
Kpna2	ctgacttgagaatccaatgtcatgg	gctgtttctctctagaaagcaatttcc	tgactgtgaaaacagtgtag	ggtcagacaactcattaatg	ggatgttgtttaaaggggaa	tgtgcacttaaagtcagcct	4	1127	697-780
Ocel1	ctctgggacaggtgacaccgag	gtgagatccatgcctattgagcc	cgcggcgtcatgctcgagag	gatccgcactctgggttgcg	tgcttggggcctgcctgcag	gctcaggttagtttcatctg	1,2,3,4	2203	1,714-1,837
Slc25a18	gttctcgagggcatctttgaagg	gtcatcatgtggggctgagctc	agagaggttcctagcctgtg	gctgctcagggagggtgctg	tgctacaggctcacaaagtg	tggaaagttaattccctgcg	3,4	945	510-592
Ipo7	gttggatccccccctggattgtag	gatggctcagcagctaagaccc	agaggatcacaaacctcttc	gtagggatcaaacttagagc	agccctactaccaaatatca	gtgcattgtgtgttccattg	2	940	395-627
Xpo5	ggggttgacattcaacttgtatggg	cagcacagaaacacctttaatctcc	agccctgggagatggcatag	gctgaggactggaatccagg	gcacctgtgtggtcatgaaa	gcagcaggtgctgctaacct	2	1569	547-1,164
Mcts1	gcagtgctatctccattcctagtattc	ctccttgtggtgtggttgaatgac	agcttagcaataggcttgac	gtaaggaagaccaatttcct	gccaccactccatgctttta	agtttggtattgttgccaag	2,3	2551	1,427-2,239
Wdr82	cctctgttgtgattcttggtttgtg	ccaacccctgccttttagaag	caaccacataatgacttagc	gggggagaggatctcgaggg	tgcaaatcataaacacaacg	gctggaggagtgggagtacc	2	1172	659-871
Cyp4v3	gcatggtagcagacatttttactgac	gaagagcatttgcacaacacgtcc	gaatcaacgcccaacaccat	gggtgtgagctcacaggagg	tgcaacaataaatcaccgag	ggctatatgcatgtcttgtt	2	934	406-623
Cdhr2	cagggacaagccctttcaaacgc	agcagaaccgttgggttcctgg	gactcttgctcatcagcttg	tggctcgaaggaaacatggg	gcatgtatgcccctacactg	gtggtgactaatgactgatg	4,5	1191	1,030-1,133
Eif3i	ccatgtgtgtttttgtattgtgtgtgc	ctggcctcgaactcagaaaacc	cgggaggcatggagtctgag	agcctcattagcaggactcg	agtgtgctctgtcacaaagg	agaagtgagtacagcttccg	5,6	1272	722-811
Cfap57	ccactataaacccagccctggg	tgtcaaggtttgtgcttggatgc	atagacaggccaccatacac	agtatagctctactcacatg	ctcctgaagcctctccaccg	catctcctggaatgcttgtg	4	1198	656-846
Clcnkb	gacaggttttctctgggctggag	gctgggaagctggaccctacc	gccaagctacaaagacatcc	gaaataagccgggccggtgg	none	gacagtggagggctaggaca	5	943	435-548
Cndp2	gctctgtaagggaaagagatgaccc	aataggacatacccagttctgtgagg	gctggtccctacaaagactg	gtggttgagatgtttcacct	gggatatttactgtgacccg	ggaagctgagcaagctcagg	4	1516	955-1051
Ddx6	attatctgatgcgtgccattggg	caactatttcaatacacagagcctcagc	gctaagactacagatactct	gttactgtaagttacagcct	tgaaatgacgctgcatgtgt	gtgctatcaggctagcacat	3	1657	932-1099
Fubp1	gcatgtgagaagttaggattagactagc	aaagggccacaaatacagtcagtcc	gttacgtacaattgaacgag	tgtgtgggttgttttaaatg	gtggattctgactgaatgaa	ggttaaggttggttggttgc	2	1343	635-823
Gsg1l	cagggacaagcctttcaaacgc	agcagaaccgttgggttcctgg	gtcttctcctgccttgagtg	tgtccctctccactcccgcg	gctgcgagttccagtgcgtg	gaaatgacttcaggccgaag	1	1191	799-885
Sfmbt2	gaacttcatgtctgcgagagcagc	cttaaggaggctgagttgctgc	gacatttccagcctaaagtg	gaaagtctgcaaaaaagggg	gagccacaatagagttttgt	tgtggctgggggtaaatctt	4	1782	1039-1436
Sh3rf2[c]	gtgtgagggagctaagttctgagtcc	caggttggacatgcctagtagtcc	agtatggcaggctgtcaacg	tggttttgggtagagtgagg	ggctgggcatggagactagg	gatctctattgtctcacttc	5	836	383(EZ) ,292-532
Tuba1a	cagatgtccatgatgaaataccaggtc	gtaacctgtcaacttcacacaatgtgc	gcagtattaaggtgacatct	ggagtcacatccctaataac	gtgtgccagctttcatgctt	tgggaaggttgggtccccag	2,3,4	2623	2037-2286

a) Gene names highlighted in grey were involved in direct comparisons between CRISPR-EZ and Microinjection.

b) For each deletion, up to 4 sgRNAs were combined during the electroporation. Two were designed upstream of the targeted exon and two were designed downstream. Shortest and Longest predicted deletion sizes are noted.

c) Electroporation was performed with 5'gRNA-1 and 3'gRNA-1. Microinjection was performed with all four sgRNA.