

Supplemental Table 1 – A table of primers and oligos used in this study

Primer ID	Sequence (5'->3')	Purpose
UM_2149	GGCGCGCCGAGCTCGAATTCGTCCATTGAAGC	PpU6 promoter amplicon
UM_2151	GTCGACCCTGCCATGGGTTGTAAGTCCTCCACCTTCC	PpU6 promoter amplicon
UM_2206	TGAGACCTTGGTCTCTATGGGTTGTAAGTCCTCCACCTTC	PpU6 promoter + Bsal amplicon
UM_2207	AGAGACCAAGGTCTCAGTTTTAGAGCTATGC	Bsal + sgRNA amplicon
UM_2208	CAGTCACGACGTTGTAAAACGACGG	Bsal + sgRNA amplicon
UM_2320	GGGGACAAGTTTGTACAAAAAAGCAGGCTCCCTTCACCGTCAGATGC	pENTR-PpU6P-L1L2-sgRNA, pENTR-PpU6P-L1R5-sgRNA, pENTR-PpU6P-L1L4-sgRNA insert
UM_2321	GGGGACAAGTTTGTATACAAAAGTTGTGAGCTCGAATTCGTCCATTGAAGC	pENTR-PpU6P-L1R5-sgRNA insert
UM_2322	GGGGACAAGTTTGTATACAAAAGTTGCCCTTCACCGTCAGATGC	pENTR-PpU6P-L5L2-sgRNA, pENTR-PpU6P-L5L4-sgRNA insert
UM_2323	GGGGACCAACTTTGTACAAGAAAGCTGGGTAGAGCTCGAATTCGTCCATTGAAGC	pENTR-PpU6P-L1L2-sgRNA, pENTR-PpU6P-L3L2-sgRNA, pENTR-PpU6P-L5L2-sgRNA insert
UM_2324	GGGGACAAGTTTGTATAGAAAAGTTGGGTGGAGCTCGAATTCGTCCATTGAAGC	pENTR-PpU6P-L1L4-sgRNA, pENTR-PpU6P-L5L4-sgRNA insert
UM_2325	GGGGACAAGTTTCTATACAAAAGTTGCCCTTCACCGTCAGATGC	pENTR-PpU6P-R4R3-sgRNA insert
UM_2326	GGGGACAAGTTTATTATACAAAAGTTGTGAGCTCGAATTCGTCCATTGAAGC	pENTR-PpU6P-R4R3-sgRNA insert
UM_2327	GGGGACAAGTTTGTATAATAAAGTTGCCCTTCACCGTCAGATGC	pENTR-PpU6P-L3L2-sgRNA insert
DC_173	GGGGACAAGTTTCTATACAAAAGTTGTAGCTGATTAAGTTGGGTAACGCCAGG	stop cassette amplicon
DC_174	GGGGACAAGTTTATTATACAAAAGTTGTAGGCTTTACACTTTATGCTTCCG	stop cassette amplicon
UM_2117	GGCAGGGTCGACAATGGTGAGCAA	NLS-GFP-GUS protospacer
UM_2118	AAACTTGCTCACCATTGTGCACCC	NLS-GFP-GUS protospacer
UM_2657	CCATCTATCTTCGAACGCATGCGG	sgRNA-1 protospacer (Pp3c8_18830V3.1)
UM_2658	AAACCCGCATGCGTTCGAAGATAG	sgRNA-1 protospacer (Pp3c8_18830V3.1)
UM_2695	TCCATCCGTCTCAGAAG	Site 1 genotyping amplicon (Pp3c8_18830V3.1)
UM_2696	AACGACTATCAAATGGTGCC	Site 1 genotyping amplicon (Pp3c8_18830V3.1)
UM_2659	CCATCACAGGTGCAGTCCCCTGTG	sgRNA-5 protospacer (Pp3c8_18850V3)
UM_2660	AAACCACACGGGACTGCACCTGTG	sgRNA-5 protospacer (Pp3c8_18850V3)
UM_2697	CTACTTAGGGCACAGCTTC	Site 5 genotyping amplicon (Pp3c8_18850V3)
UM_2698	CTACTAGGTGGTCAGCAAC	Site 5 genotyping amplicon (Pp3c8_18850V3)
UM_2661	CCATCTGCGGGAGAACAGACAGAA	sgRNA-6 protospacer (Pp3c23_15670V3)
UM_2662	AAACTTCTGTCTGTTCTCCCGCAG	sgRNA-6 protospacer (Pp3c23_15670V3)
UM_2699	TGCTGTAGGTTGCTTGAG	Site 6 genotyping amplicon (Pp3c23_15670V3)
UM_2700	CTGAAATTGCCTTACTTCGC	Site 6 genotyping amplicon (Pp3c23_15670V3)
UM_2663	CCATTTATGCCGACGGTCCAGTGA	sgRNA-2 protospacer (Pp3c18_4770V3)

UM_2664	AAACTCACTGGACCGTCGGCATAA	sgRNA-2 protospacer (Pp3c18_4770V3)
UM_2701	AGCTAAAGCTGTTGGACG	Site 2 genotyping amplicon (Pp3c18_4770V3)
UM_2702	AGCCTTCTTGTACGCATTC	Site 2 genotyping amplicon (Pp3c18_4770V3)
UM_2665	CCATGCTATGACCAACGTCCCCTC	sgRNA-3 protospacer (Pp3c22_15110V3)
UM_2666	AAACGAGGGGACGTTGGTCATAGC	sgRNA-3 protospacer (Pp3c22_15110V3)
UM_2703	TATTCTACGATATGCAGTTGGG	Site 3 genotyping amplicon (Pp3c22_15110V3)
UM_2704	CCTGAGTCCTTCTTCCTG	Site 3 genotyping amplicon (Pp3c22_15110V3)
UM_2655	CCATGACAGCCCTCGTAATGCCGA	sgRNA-4 protospacer (Pp3c4_16430V3)
UM_2656	AAACTCGGCATTACGAGGGCTGTC	sgRNA-4 protospacer (Pp3c4_16430V3)
UM_2693	ATTGACAAGGTGGGATGTG	Site 4 genotyping amplicon (Pp3c4_16430V3)
UM_2694	GAGTCCAGACAAACTTCAGC	Site 4 genotyping amplicon (Pp3c4_16430V3)
DC_9	CCATTCACCGCTTCTAAAGGTCCC	sgRNA-7 protospacer (Pp3c16_8300)
DC_10	AAACGGGACCTTTAGAAAGCGGTGA	sgRNA-7 protospacer (Pp3c16_8300)
DC_11	CCATCACGCGAACCAGATTAATCA	sgRNA-8 protospacer (Pp3c16_8300)
DC_12	AAACTGATTAATCTGGTTCGCGTG	sgRNA-8 protospacer (Pp3c16_8300)
DC_45	CTTCGTCATGGCGCAGG	Pp3c16_8300 genotyping amplicon
DC_461	GCCCAGCTTCAAACGTAACC	Pp3c16_8300 genotyping amplicon
DC_30	CCATAGCACAGGCGACGGTTGCAC	sgRNA-9 protospacer (Pp2c9_8040)
DC_31	AAACGTGCAACCGTCGCCTGTGCT	sgRNA-9 protospacer (Pp2c9_8040)
DC_32	CCATCGGCTTTGCTTGAATAGAC	sgRNA-10 protospacer (Pp2c9_8040)
DC_33	AAACGTCTATTCCAAGCAAAGCCG	sgRNA-10 protospacer (Pp2c9_8040)
DC_61	TCACCGTCCTCGTTGTAG	Pp2c9_8040 genotyping amplicon
DC_62	CAAACATCGACAAGCTACACG	Pp2c9_8040 genotyping amplicon
DC_118	CCATATAGCCGTTGATCTATTTCC	Pp3c22_1100 protospacer
DC_119	AAACGGAAATAGATCAACGGCTAT	Pp3c22_1100 protospacer
DC_108	GGGGACAAGTTTGTACAAAAAAGCAGGCTACT ACAAGCGGAGATTGCTCAAGC	Pp3c22_1100 5' homology amplicon
DC_109	GGGGACAACCTTTGTATAGAAAAGTTGGGTGTT TCCAGGCCACAGCATCAATCTC	Pp3c22_1100 5' homology amplicon
DC_112	GGGGACAACCTTTGTATAATAAAGTTGATCAAC GGCTATACTCATTTCTCC	Pp3c22_1100 3' homology amplicon
DC_113	GGGGACCACTTTGTACAAGAAAGCTGGGTAAT CTCACCTTCCGTTCTAAATACG	Pp3c22_1100 3' homology amplicon
DC_120	CATTTTCGTCGGAGTGTCGG	Pp3c22_1100 genotyping amplicon
DC_121	GGTGTACAGGTTGATGAAGC	Pp3c22_1100 genotyping amplicon
DC_225	CCATCGATTCTTGCAGTCCGAAT	Hygromycin resistance protospacer
DC_226	AAACATTCGGACCGCAAGGAATCG	Hygromycin resistance protospacer
DC_9	CCATTCACCGCTTCTAAAGGTCCC	Pp3c16_8300 tagging protospacer
DC_10	AAACGGGACCTTTAGAAAGCGGTGA	Pp3c16_8300 tagging protospacer
DC_179	GGGGACAAGTTTGTACAAAAAAGCAGGCTCAT GGAAACATGGTTGAAATTATACG	Pp3c16_8300 5' homology amplicon
DC_180	GGGGACAACCTTTGTATAGAAAAGTTGGGTGAG AAACGCAAATCGACAGC	Pp3c16_8300 5' homology amplicon

DC_181	GGGGACAACCTTTGTATAATAAAGTTGGGATGT ATGTCAGAGAGAGACCAGG	Pp3c16_8300 3' homology amplicon
DC_182	GGGGACCACTTTGTACAAGAAAGCTGGGTGAA AGTATAATCACAGGCCTCAACG	Pp3c16_8300 3' homology amplicon
DC_461	CCTTTCCACAATTTAAATTTAAAGAATAAGAC ATGAG	Pp3c16_8300 HDR genotyping amplicon
DC_401	GCACGAACATGAGTGAGG	Pp3c16_8300 HDR genotyping amplicon
DC_272	GACCAGGTACCTTTAGAAGC	Pp3c16_8300 site-directed mutagenesis
DC_273	GCTTCTAAAGGTACCTGGTC	Pp3c16_8300 site-directed mutagenesis
DC_159	GGGGACAACCTTTTCTATACAAAGTTGAAGGAT CCATGGTGAGCAAGGGCGAG	mEGFP and mRuby2 cds amplicon (C+N term)
DC_111	GGGGACAACCTTTATTATACAAAGTTGTTTACT TGTACAGCTCGTCCATGC	mEGFP and mRuby2 cds amplicon (C term)
DC_178	GGGGACAACCTTTATTATACAAAGTTGTCTTGT ACAGCTCGTCCATGCC	mEGFP and mRuby2 cds amplicon (N-term)
EYFPF	AATGGGATCCATGGTGAGCAAGGGCGAG	mRuby-pGEM insert
EYFPR	AATGAGATCTCTTGTACAGCTCGTCCATGC	mRuby-pGEM insert