

SUPPLEMENTARY SEQUENCES

CAG-NLS-dCas9-HA-10xGCN4-P2A-scFv-P65-HSF1-Flag-WPRE-PolyA (Fig. 1b-

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GACATTGATTATTGACTAGTTATTAATAGTAATCAATTACGGGGTCATTAGTTCATAGCCCATATATGGAGTTCGCGTTACATAACTTACGGTAAATGGCCCGCTGGCT
GACCCGCCAACGACCCCGCCATTGACGTCAATAATGACGTATGTTCCCATAGTAACGCCAATAGGGACTTTCATTGACGTCAATGGGTGGAGTATTACGGTAAACT
GCCCCTTGGCAGTACATCAAGTGTATCATATGCCAAGTACGCCCCCTATTGACGTCAATGACGGTAAATGGCCCGCTGGCATTATGCCAGTACATGACCTTATGGGA
CTTCTCTACTTGGCAGTACATCTACGTATTAGTCATCGCTATTACCATGGTCGAGGTGAGCCCCAGTTCTGCTTCACTCTCCCCATCTCCCCCCCCCTCCACCCCCAATT
TTGTATTATTATTTTAAATTATTTTGTGACGATGGGGGCGGGGGGGGGGGGGGGGGCGCGCCAGGCGGGGCGGGGCGGGGCGAGGGGCGGGGCGGGGCGAG
GCGGAGAGGTGCGCGCGCAGCCAATCAGAGCGGCGCGCTCCGAAAGTTCTTTTATGGCAGGCGCGCGCGCGGCCCTATAAAAGCGAAGCGCGCGCGG
GCGGGAGTCGTCGTTGCTTCGCCCGTGCCTCCGCGCCCTCGCGCCCGCCCGCCCGCTGACTGACCGGTTACTCCACAGGTGAGCGGGCGGGAC
GGCCCTTCTCTCCGGGTGTAATTAGCGCTTGTTTAAAGCGCTCGTTCTTTCTGTGGTGTGCGTAAAGCCTTAAAGGGCTCCGGGAGGGCCCTTGTGCGGGG
GGAGCGGTCGCGGGGTGCGTGTGTGTGTGTGTGTGTGTGTGTGTGTGTGTGTGTGTGTGTGTGTGTGTGTGTGTGTGTGTGTGTGTGTGTGTGTGTGTGT
GCGCTCCGCGTGTGCGCAGGGGAGCGCGCGGGGGCGGTGCCCGCGGTGCGGGGGGCTGCGAGGGGAACAAGGCTGCGTGTGCGGGGTGTGTGTGTGTGTGT
GTGAGCAGGGGTGTGGGCGCGCGGTGGGCTGAACCCCCCTGCACCCCCCTCCCGAGTTGCTGAGCACGGCCCGGCTCGGGTGTGCGGGCTCCGTGCGGGG
CGTGGCGCGGGCTCGCGTGCCTGCGGGGCGGGGTGGCGGAGGTGGGGTGCCTGGCGGGGCGGGGCGGCTCGGGCGGGGAGGGCTCGGGGAGGGGCGCGG
CGGCCCGGAGCGCGCGGCTGTCGAGGCGCGCGAGCCGACGCAATTGCTTTATGGTAATCGTGTGAGAGGGCGCAGGACTTCTTTGTCCCAATCTGCGCG
AGCCGAAATCTGGGAGGCGCGCGCACCCCTCTAGCGGCGCGGGCGAAGCGGTGCGGCGCGGCGAGGAAGAAATGGGCGGGGAGGGCTTCTGTGCTGCGC
GCGCGCGCTCCCTTCTCCATCTCCAGCTCGGGGTGCCGAGGGGACGGTGCCTTGGGGGGACGGGCGAGGGCGGGTTCGGCTTGTGCGGTGTGACCGG
CGGCTCTAGAGCTCTGTAACCATGTTACGCTTCTCTTTCTACAGATCTTAATTAAGTACGCTACGCGCGCCACCATGCCAAGAAGAAGCGCAAGGTGGGA
CGGCTGTGAGGATATCAAGCTTGTGCTACCGCGGCGCGGATCGCCACCTGGACAAGAAGTACAGCATCGGCTGGCCATCGGCACCACTCTGTGGGTGGGCC
GTGATCACCGACGAGTACAAGGTGCCAGCAAGAAATTAAGGTGCTGGGCAACACCGCGCACAGCATCAAGAAGAAGCTGATCGGCGCCCTGCTGTCGACAG
CGGAGAAACAGCCAGGCCACCGGCTGAAGAGAACCAGCAAGAAGATACACAGACGGAAGAACCGGATCTGCTATCTGCAAGAGATCTTCAGCAACGAGATG
GCCAAGGTGGACGACGCTTCTTCCACAGACTGGAAGAGTCTTCTGTTGGAAGAGGATAAGAAGCACGAGCGGCACCCCATCTTCGCAACATCTGTGACGAGGTG
GCCTACCACGAGAAGTACCCACCATCTACACCTGAGAAAGAACTGGTGACAGCACGACAGGCGGACCTGCGGCTGATCTATGCGCCCTGGCCACATGATC
AAGTTCGGGGCCACTTCTGATCGAGGGGACCTGAACCCGACACAGCGACGTGGACAAGTGTTCATCCAGCTGGTGCAGACCTACAACAGCTGTCGAGGAA
AACCCCATCAACGCCAGCGCGTGGACGCCAAGGCCATCTGTCTGCCAGACTGAGCAAGAGCAGACGGCTGGAATCTGATCGCCAGCTGCCCGCGAGAAGAA
GAATGGCTGTTGCGCAACTGATTGCCCTGAGCCTGGGCTGACCCCACTTCAAGGCAACTTCGACCTGGCCGAGGATGCCAAATGCAGCTGAGCAAGGACAC
CTACGACGACGACCTGGACAACCTGCTGGCCAGATCGGCGACCACTGACCGACCTGTTCTGCGCGCAAGAACCTGTCCGACGCCATCTGCTGAGCGACATCT
GAGAGTGAACACCGAGATACCAAGGCCCTGAGCGCTCTATGATCAAGAGATACGACGAGCACCACGACCTGACCTGCTGAAAGCTCTGCTGCGGCAGC
AGCTGCTGAGAAGTACAAGAGATTTTCTTCCAGCAGAGCAAGACGGCTACGCGGCTACATCGATGGCGGAGCCAGCCAGGAAGTTTACAAGTTTCATCAAGC
CCATCTGGAAAAGATGGACGGCACCGAGGAAGTCTGCTGAAGCTGAACAGAGAGGACCTGCTGCGGAAGCAGCGGACCTTCGACAACGGCAGCATCCCCACCAAG
ATCCACCTGGGAGAGCTGCACGCCATTCTGCGCGCGCAGGAAGATTTTACCCATTCTGAAGGACAACCGGGAAGATCGAGAAGATCTGACCTTCCGATCCCTT
ACTACGTGGGCCCTCTGGCCAGGGGAAACAGCAGATTGCTGATGACGAAAGAGCAGGAAACCATCACCCCTGGAACCTCGAGGAAGTGTGACAAAGGCG
GCCAGCGCCAGAGCTTCATCGAGCGGATGACCAACTTCGATAAGAACTGCCAACGAGAAGGTGCTGCCAAGCACAGCTGCTGTACGAGTACTTACCCTGTAC
AACGAGCTGACCAAGTGAATACGTGACCGAGGAATGAGAAGCCCGCTTCTGAGCGGCGAGCAGAAAAAGCCATCTGGACCTGCTGTTCAAGCAACCGG
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ATACCACGATCTGCTGAAATATCAAGGACAAGGACTTCTGGACAATGAGGAAAACGAGGACATTCTGGAAGATATCGTGTGACCTGACACTGTTTGAAGACAGA
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GCTGATCAACGGCATCCGGGACAAGCAGTCCGGCAAGACAATCTGATTCTGAACTCCGACGGCTTCGCCAACAGAACTTCATGCAGCTGATCCACGACGACAG
CCTGACCTTTAAGAGGACATCCAGAAAGCCAGGTGTCGCGCGCAGGGGATAGCTGACGAGCAGCATTGCAATCTGGCCGCGACGCCGCCATTAAGAAGGGCAT
CTGCGAGACAGTGAAGTGTGGACGAGCTGTGAAAGTATGGGCGGCGACAAGCCGAGAACATCGTGATCGAAATGGCCAGAGAGAACCAGACCACCGAAG
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42 GGACAGAAGAACAGCCGCGAGAGAATGAAGCGGATCGAAGAGGGCATCAAAGAGCTGGGCAGCCAGATCCTGAAAGAACACCCCGTGGAAAAACCCAGCTGCAGA
43 ACGAGAAGCTGTACCTGTACTACCTGCAGAATGGGCGGGATATGTACGTGGACCAGGAACTGGACATCAACCGGCTGTCCGACTACGATGTGGACGCTATCGTGCCTC
44 AGAGCTTTCTGAAGGACGACTCCATCGATAACAAAGTCTGACTCGGAGCGACAAGAACCGGGGCAAGAGCGACAACGTGCCCTCCGAAGAGTCTGTGAAGAAGATG
45 AAGAAGTACTGGCGCCAGCTGCTGAATGCCAAGCTGATTACCCAGAGGAAGTTCGACAATCTGACCAAGGCCGAGAGAGGCGGCTGAGCGAACTGGATAAGGCCGG
46 CTTTCATCAAGAGACAGCTGGTGGAAACCCGGCAGATCACAAGCAGCTGGCAGAGATCCTGGACTCCCGGATGAACACTAAGTACGACGAGAACGACAACTGATCCG
47 GGAAGTGAAAGTATCACCTGAAGTCCAAGCTGGTGTCCGATTTCGGAAGGATTTCAGTTTTACAAGTGCGCGAGATCAACAACCTACCACCAGCCCCACGACGCC
48 TACCTGAACGCCGTCGTGGGAACGCCCTGATCAAAAAGTACCCTAAGCTGGAAAGCGAGTTCGTGTACGGCGACTACAAGGTGTACGACGTGCGGAAGATGATCGCC
49 AAGAGCGAGCAGGAAATCGGCAAGGTACCGCCAAGTACTTCTTACAGCAACATCATGAACTTTTTCAAGACCGAGATTACCTGGCCACGGCGAGATCCGGAAG
50 CGGCCTCTGATCGAGACAAACGGCGAAACAGGCGAGATCGTGTGGGATAAGGGCCGGGACTTTGCCACCGTGGGAAAGTGTGTCTATGCCCCAAGTGAATATCGTG
51 AAAAGACCGAGGTGCAGACAGGCGGCTTCAGCAAAGAGTCTATCTGCCCAAGAGGAACAGCGACAAGCTGATCGCCAGAAAGAGGACTGGGACCTAAGAAGTA
52 CGGCGGCTTCGACAGCCCCACCGTGGCCTATTCTGTGCTGGTGGTGGCCAAAGTGAAAAAGGGCAAGTCCAAGAACTGAAGAGTGTGAAGAGCTGTGGGGATCAC
53 CATCATGGAAGAAGCAGCTTCGAGAAGAATCCATCGACTTTCTGGAAGCCAAGGGCTACAAGAAAGTAAAAAGGACCTGATCATCAAGCTGCCTAAGTACTCCCTG
54 TTCGAGCTGGAACGGCCGGAAGAGAATGCTGGCCTCTGCCGGCAACTGCAGAAGGGAAACGAACTGGCCCTGCCCTCCAAATATGTGAACCTCTGTACCTGGCC
55 AGCCACTATGAGAAGCTGAAGGGCTCCCCGAGGATAATGAGCAGAAACAGCTGTTTGTGAACAGCACAAACACTACCTGGACGAGATCATCGAGCAGATCAGCGA
56 GTTCTCCAAGAGAGTATCTGGCCGACGCTAATCTGGACAAGGTGCTGAGCGCTACAACAAGCAGAGACAAGCCTATCAGAGAGCAGGCCGAGAATATCATCCA
57 CCTGTTTACCCTGACCAATCTGGGAGCCCCGCCGCTTCAAGTACTTTGACACCACCATCGACCGGAAGAGGTACACCAGCACCAAGAGGTGCTGGACGCCACCTG
58 ATCCACCAGAGCATACCGGCCGTGACGAGACCGATCGACCTGTCTAGCTGGGAGGCGACGCCTATCCCTATGACGTGCCGATTATGCCAGCCTGGGAGCGGC
59 TCCCCCAAGAAAAACGCAAGGTGGAAGATCCTAAGAAAAAGCGGAAAGTGGACGGCATTGGTAGTGGGACAACGGCAGCAGCGGATCCAACGGTCCGACTGACG
60 CCGCGGAAGAAGAACTTTGAGCAAGAATTATCATCTTGAGAACGAAGTGGCTCGTCTTAAGAAAGTTCTGGCAGTGGAAGAACTGCTTTCAAGAATTACACCT
61 GGAATGAGGTAGCTAGACTGAAAAAGGGAGCGGAAGTGGGAGGAGTTGCTGAGCAAAATTATCATTTGGAGAACGAAGTAGCAGACTAAAGAAAGGTCGG
62 GATCGGGTGAGGAGTTACTCTGAAAAATTATCATCTCGAAAAACGAAGTGGCTCGGCTAAAAAGGGCAGTGGTTCTGGAGAAGAGCTATTATCTAAAAACTACACCT
63 CGAAATGAGGTGGCAGCTTAAAAAGGGAAAGTGGCAGTGGTGAAGAGCTACTTCAAGAATTATCATCTTGAGAACGAGGTAGCGCTTTGAAGAGGGTTCGG
64 CTCAGGAGAGGAAGTCTCTCGAAGAACTATCATCTTGAAATGAGGTGCTGATTAAAAAGGGATCGGGCAGTGGTGAAGAACTACTTTCAAGAATTACACCTC
65 GAAACGAAGTAGCTCGATTAAAGAAAGGTTAGGGTGGGTGAAGAATTACTGAGTAAAAATTATCATCTGGAATGAGGTAGCGAGACTAAAAAGGGAGTGGT
66 TCTGGCGAGGAATTGCTATCGAAAAATTATCATCTTGAGAACGAAGTTGTAGGCTCAAAAAGGGCTCAGGCTCAGGCACCGCGGTAACATAGGTGGTGAACCGGT
67 CGATGGATCTACAGCGGCCGCAAGGTGGAGGTGGACCAAGAAGAAGCGCAAGGTGGGAAGCGGAGCTACTAAGTTCAGCTGTGAAGCAGGCTGGAGAGCTGGA
68 GGAGAACCCTGGACCTGCACCAGGAAGTATGAGCGAGCTGATTAAGGAGAATATGCACATGAAGCTGTACATGGGCCCCGACATCGTATGACCCAGAGCCCCAGCA
69 GCCTGAGCGCCAGCGTGGCGACCGCGTGACCATCACTGCCGAGCAGCACCGGCGCGTGACCAACGCAACTACGCCAGCTGGGTGCAGGAGAAGCCCGCAA
70 GCTGTTCAAGGGCTGATCGGCGGACCAACAACCGCGCCCCGGCGTGCCAGCGCTTACGCGGAGCCTGATCGGCGACAAGGCCACCTGACCATCAGCAGCC
71 TGCAGCCCGAGGACTTCCCACTACTTCTGCGCCCTGTGGTACAGCAACCACTGGGTGTTGCGCCAGGGCACCAAGGTGGAGCTAAGCGCGGCGGCGGCGCAGC
72 GCGCGCGCGGAGCGGCGGCGGCGGCGAGCAGCGGCGGCGGCGAGGTGAAGTCTGAGAGCGGCGGCGGCTGGTGCAGCCGCGGCGGAGCTGAAGCT
73 GAGCTGCGCGGTGAGCGGCTTACCGCTGACCGACTACGGCTGAAGTGGTGCAGGCGGCGGCGGCGGCTGGAGTGGATCGGCGTATCTGGGCGACGGCA
74 TCACCGACTACAACAGCGCCCTGAAGGACCGTTATCATCAGCAAGGACAACGGCAAGAACACCGTGTACCTGCAGATGAGCAAGGTGCGCAGCGACGACACCGCC
75 CTGTACTACTGCTGACCGGCTGTTCTGACTACTGGGCGCAGGCGACCTGGTGACCTGAGCAGTACCCATACGATGTTCCAGATTACGCTGGTGGAGGCGGAGGTT
76 CTGGGGGAGGAGTGTGGCGGTGGTGGTTCAGGAGGCGGCGGAAGCCCTAAGAAAAAGGGAAGGTGGCGGCGGCTGGATCCCTTCAGGCGAGATCAGCAACCA
77 GGCCCTGGCTCTGGCCCTAGCTCCGCTCAGTGTGCCCAGACTATGGTGCCCTAGTGTATGGTGCCTCTGGCCAGCCACCTGCTCCAGCCCTGTGCTGACC
78 CCAGGACACCCAGTCACTGAGCGCTCCAGTGCCCAAGTCTACACAGGCGGCGAGGGGACTCTGAGTGAAGCTCTGTGCACCTGCAGTTGACGCTGATGAGGAC
79 CTGGGAGCTCTGTGGGAACAGCACCATCCCGAGTGTTCACAGATCTGGCCTCCGTGGACAACCTGAGTTTCAGCAGTGTGAATCAGGGCTGTCCATGTCTC
80 ATAGTACAGCCGAACCAATGTGTAGGAGTACCCCGAAGCCATTACCGGCTGGTGACCGGAGCCAGCGGCCCCCGACCCGCTCCAACCTCCCTGGGAACAGC
81 GGCTGCTCAATGGGCTGTCCGAGATGAAGACTTCTCAAGCATCGCTGATATGGACTTTAGTGGCTGTGTACAGATTCTCTAGTGGGAGGGAGAGGTGGAA
82 GCGGCTTCAGCGTGACACCAAGTGCCTGCTGACCTGTTACGCCCTCGGTGACCGTGCCGACATGAGCCTGCCTGACCTTGACAGCAGCCTGGCAGTATCCAAG
83 AGCTCCTGTCTCCAGGAGCCCCAGGCTCCCGAGGCGAGAAACAGCAGCCCGATTAGGGAAGCAGCTGGTGCATACAGCGCAGCGCTGTTCTCTGCTG
84 GACCCCGGCTCCGTGGACACGGGAGCAACGACCTGCCGGTGTGTTGAGCTGGGAGAGGGCTCTACTTCTCCGAAGGGGACGGCTTCGCCGAGGACCCACCATT

85 TCCCTGCTGACAGGCTCGGAGCCTCCAAAGCCAAGGACCCCACTGTCTCCGCTAGCGAGGGCAGAGGAAGTCTGCTAACATGCGATTACAAAGACGATGACGATAAG
 86 TAAATCAACCTCTGGATTACAAAATTTGTGAAAGATTGACTGGTATTCTTAACATATGTTGCTCCTTTACGCTATGTGGATACGCTGCTTAATGCCTTTGTATCATGCTAT
 87 TGCTTCCCGTATGGCTTTCATTTCTCTCTGTATAAATCCTGGTGTCTCTTTATGAGGAGTTGTGGCCCGTTGTGAGGCAACGTGGCGTGGTGTGCACTGTGTTG
 88 CTGACGCAACCCCACTGGTTGGGGCATTGCCACCACTGTGAGCTCCTTCCGGGACTTTCGCTTTCCTCCCTCCCTATTGCCACGGCGGAACATCATGCCCGCTGCCTT
 89 GCCCCTGCTGACAGGGGCTCGGCTGTTGGGCACTGACAATCCGTGGTGTGTGCGGGAATCATCGTCTTTCCTTGGCTGCTCGCTGTGTGCCACCTGGATTCT
 90 GCGCGGGAGCTCTTCTGCTACGTCCCTCGGCCCTCAATCCAGCGGACCTTCTCCCGCGGCTGTGCGGCTCTGCGGCTCTTCCGCTCTCGCTTCGCCCTC
 91 AGACGAGTCGGATCTCCCTTGGGCCCTCCCGCATCGATACCGTCGATCCTGTGCCTTAGTTGCCAGCCATCTGTTTGGCCCTCCCGTGCCTTCTTGACC
 92 CTGGAAGGTGCCACTCCCACTGTCTTTCTAATAAAATGAGGAAATGCATCGCATTGTCTGAGTAGGTGTCTATTCTATTGCGGGGTGGGTGGGGCAGGACAGCAA
 93 GGGGGAGGATTGGGAAGACAATAGCAGGCATGCTGGGGATGCGGTGGGCTCTATGG

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95 TS-Mini-TK-mCherry-PolyA (Fig. 1b)

96 GTCCCTCCACCCACAGTGGGGCATTCGCATATTAAGGTGACGCGTGTGGCTCGAACACCGAGCGACCCTGCAGCGACCCGCTTAAGTGAACGCGTGCCACCAT
 97 GGTGAGCAAGGGCGAGGAGGATAACATGGCCATCATCAAGGAGTTCATGCGCTTCAAGGTGCACATGGAGGGCTCCGTGAACGGCCACGAGTTCGAGATCGAGGGCG
 98 AGGGCGAGGGCCGCCCTACGAGGGCACCCAGACCGCAAGCTGAAGGTGACCAAGGGTGGCCCCCTGCCCTTCGCTGGGACATCTGTCCCTCAGTTCATGTACG
 99 GCTCAAGGCTACGTGAAGCACCCCGCCGACATCCCCGACTACTGAAGTGTCTTCCCCGAGGGCTTCAAGTGGGAGCGCGTGATGAACCTCGAGGACGGCGCG
 100 TGGTGACCGTGACCCAGGACTCCTCCTGACGACGGCGAGTTCATCTACAAGGTGAAGTGCAGCGCACCAACTTCCCTCCGACGGCCCCGTAATGCAGAAGAAGA
 101 CCATGGGCTGGGAGGCTCCTCCGAGCGGATGTACCCGAGGACGGCGCCTGAAGGGCGAGATCAAGCAGAGGCTGAAGCTGAAGGACGGCGGCCACTACGACGC
 102 TGAGGTCAAGACCACCTACAAGGCCAAGAAGCCGTGCAGCTGCCCGCGCCTACAAGTCAACATCAAGTTGACATCACCTCCACAACGAGGACTACACCATCGT
 103 GGAACAGTACGAACGCGCCGAGGGCCGCACTCCACCGCGGCATGGACGAGCTGTACAAGTAAACCGGTTAGGGGCCGTTTAAACCCGCTGATCAGCCTCGACTG
 104 TGCTTCTAGTTGCCAGCATCTGTGTTTGGCCCTCCCCGTCCTTCAACCTGGAAGGTGCCACTCCCACTGTCTTCTAATAAAATGAGGAAATGCATCGC
 105 ATTGTCTGAGTAGGTGTCTTCTATTCTGGGGGTGGGGTGGGGCAGGACAGCAAGGGGAGGATTGGGAAGACAATAGCAGGCATGCTGGGGATGCGGTGGGCTCTA
 106 TGG

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108 TS-Luc2CP-mCherry-PolyA (Fig. 1b)

109 GTCCCTCCACCCACAGTGGGGCATAGAGGGTATATAATGGAAGCTCGACTTCAGCTCTGGAACGCGTGCCACCATGGTGAGCAAGGGCGAGGAGGATAACATGG
 110 CCATCATCAAGGAGTTCATGCGCTTCAAGGTGCACATGGAGGGCTCCGTGAACGGCCACGAGTTCGAGATCGAGGGCGAGGGCGAGGGCCGCCCTACGAGGGCACC
 111 CAGACCGCAAGCTGAAGGTGACCAAGGTGGCCCCCTGCCCTTCGCTGGGACATCTGTCCCTCAGTTCATGTACGGCTCAAAGGCTACGTGAAGCACCCCGCC
 112 GACATCCCCGACTACTTGAAGCTGTCTTCCCCGAGGGCTTCAAGTGGGAGCGCGTGATGAACCTCGAGGACGGCGCGTGGTGACCGTGACCCAGGACTCTCCCTG
 113 CAGGACGGCGAGTTCATCTACAAGGTGAAGTGCAGCGGCACCAACTTCCCTCCGACGGCCCCGTAATGCAGAAGAAGACCATGGGCTGGGAGGCTCCTCCGAGCG
 114 GATGTACCCCGAGGACGGCGCCTGAAGGGCGAGATCAAGCAGAGGCTGAAGCTGAAGGACGGCGGCCACTACGACGCTGAGGTCAAGACCACCTACAAGGCCAAG
 115 AAGCCCGTGACGTGCCCGCGCCTACAACGTCAACATCAAGTTGACATCACCTCCACAACGAGGACTACACCATCGTGAACAGTACGAACGCGCCGAGGGCCG
 116 CCACTCCACCGCGGCATGGACGAGCTGTACAAGTAAACCGGTTAGGGGCCGTTTAAACCCGCTGATCAGCCTCGACTGTGCCTTCTAGTTGCCAGCCATCTGTTGTT
 117 GCCCCCTCCCCGTCCTTCTTCAACCTGGAAGGTGCCACTCCCACTGTCTTCTAATAAAATGAGGAAATGCATCGCATTGTCTGAGTAGGTGTCTATTCTATTCTGG
 118 GGGGTGGGTGGGGCAGGACAGCAAGGGGAGGATTGGGAAGACAATAGCAGGCATGCTGGGGATGCGGTGGGCTCTATGG

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120 TS-TRE3G-mCherry-PolyA (Fig. 1b)

121 GTCCCCCTCCACCCACAGTGGGGCGATCTTCAAGAATTCCTCGAGTTACTCCCTATCAGTGATAGAGAACGTATGAAGAGTTTACTCCCTATCAGTGATAGAGAACGTA
 122 TGCAGACTTTACTCCCTATCAGTGATAGAGAACGTATAAGGAGTTTACTCCCTATCAGTGATAGAGAACGTATGACCAGTTTACTCCCTATCAGTGATAGAGAACGTATCT
 123 ACAGTTTACTCCCTATCAGTGATAGAGAACGTATATCCAGTTTACTCCCTATCAGTGATAGAGAACGTATAAGCTTTAGGCGTGTACGGTGGGCGCCTATAAAGCAGAG
 124 CTCGTTTAGTGAACCGTCAGATCGCTGGAGCAATCCACAACACTTTTGTCTTATACCAACTTTCCGTACCACCTCTACCCCTCGTAAAAACGGTGCCACCATGGTGAGC
 125 AAGGGCGAGGAGGATAACATGGCCATCATCAAGGAGTTCATGCGCTTCAAGGTGCACATGGAGGGCTCCGTGAACGGCCACGAGTTCGAGATCGAGGGCGAGGGCGA
 126 GGGCCGCCCTACGAGGGCACCCAGACCGCCAAGCTGAAGGTGACCAAGGTGGCCCCCTGCCCTTGCCTGGGACATCTGTCCCTCAGTTATGATACGGCTCCAA
 127 GGCTACGTGAAGCACCCCGCCGACATCCCGACTACTTGAAGCTGTCTTCCCCGAGGGCTTCAAGTGGGAGCGCGTGATGAACCTCGAGGACGGCGGCGTGGTGAC
 128 CGTGACCCAGGACTCTCTCCCTGCAGGACGGCGAGTTTCATCTACAAGGTGAAGCTGCGCGGCACCAACTTCCCTCCGACGGCCCCGTAATGCAGAAGAAGACCATGGG
 129 CTGGGAGGCTCTCTCCGAGCGGATGTACCCCGAGGACGGCGCCTGAAGGGCGAGATCAAGCAGAGGCTGAAGCTGAAGGACGGCGGCCACTACGACGCTGAGGTC
 130 AAGACCACCTACAAGGCCAAGAAGCCCGTGAGCTGCCCGGCGCTACAACGTCAACATCAAGTTGGACATCACCTCCCAACAGGACTACACCATCGTGAACAG
 131 TACGAACGCGCCGAGGGCGGCCACTCCACCGGCGCATGGACGAGCTGTACAAGTAAACCGGTTAGGGGCCCGTTAAACCCGCTGATAGCCTCGACTGTGCCTTCT
 132 AGTTGCCAGCCATCTGTTGTTGCCCTCCCCGTCCTTCTTACCTGGAAGGTGCCACTCCACTGTCTTCTTAATAAATGAGGAAATGCATCGCATTTGCTG
 133 AGTAGGTGTCATTCTATTCTGGGGGTGGGTGGGCGAGGACAGCAAGGGGGAGGATTGGGAAGACAATAGCAGGCATGCTGGGGATGCGGTGGGCTCTATGG

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135 TS-miniCMV-mCherry (Fig. 1b)

136 GTCCCCCTCCACCCACAGTGGGGCGAGGTAGGCGGTGACGGTGGGAGGCTATATAAGCAGAGCTCGTTAGTGAACCGTCAGATCGCTGGAACGCGTGCCACCATG
 137 GTGAGCAAGGGCGAGGAGGATAACATGGCCATCATCAAGGAGTTCATGCGCTTCAAGGTGCACATGGAGGGCTCCGTGAACGGCCACGAGTTCGAGATCGAGGGCGA
 138 GGGCGAGGGCCGCCCTACGAGGGCACCCAGACCGCCAAGCTGAAGGTGACCAAGGTGGCCCCCTGCCCTTGCCTGGGACATCTGTCCCTCAGTTATGATACGG
 139 CTCCAAGGCTACGTGAAGCACCCCGCCGACATCCCGACTACTTGAAGCTGTCTTCCCCGAGGGCTTCAAGTGGGAGCGCGTGATGAACCTCGAGGACGGCGGCGT
 140 GGTGACCGTGACCCAGGACTCTCTCCCTGCAGGACGGCGAGTTTCATCTACAAGGTGAAGCTGCGCGGCACCAACTTCCCTCCGACGGCCCCGTAATGCAGAAGAAGAC
 141 CATGGGCTGGGAGGCTCTCTCCGAGCGGATGTACCCCGAGGACGGCGCCTGAAGGGCGAGATCAAGCAGAGGCTGAAGCTGAAGGACGGCGGCCACTACGACGCT
 142 GAGGTCAAGACCACCTACAAGGCCAAGAAGCCCGTGAGCTGCCCGGCGCTACAACGTCAACATCAAGTTGGACATCACCTCCCAACAGGACTACACCATCGTG
 143 GAACAGTACGAACGCGCCGAGGGCGGCCACTCCACCGGCGCATGGACGAGCTGTACAAGTAAACCGGTTAGGGGCCCGTTAAACCCGCTGATAGCCTCGACTGT
 144 GCCTTCTAGTTGCCAGCCATCTGTTGTTGCCCTCCCCGTCCTTCTTACCTGGAAGGTGCCACTCCACTGTCTTCTTAATAAATGAGGAAATGCATCGCA
 145 TTGTCTGAGTAGGTGTCATTCTATTCTGGGGGTGGGTGGGCGAGGACAGCAAGGGGGAGGATTGGGAAGACAATAGCAGGCATGCTGGGGATGCGGTGGGCTCTAT
 146 GG

147

148 TS-0 bp Interval-TS-miniCMV (Fig. 1c)

149 GTCCCCCTCCACCCACAGTGGGGTCCCTCCACCCACAGTGGGGACGTAGCTAGCGGTAGGCGGTGACGGTGGGAGGCTATATAAGCAGAGCTCGTTAGTGAAC
 150 CGTCAGATCGC

151 TS-5 bp Interval-TS-miniCMV (Fig. 1c)

152 GTCCCCCTCCACCCACAGTGGGGACGTAGTCCCTCCACCCACAGTGGGGACGTAGCTAGCGGTAGGCGGTGACGGTGGGAGGCTATATAAGCAGAGCTCGTTAG
 153 TGAACCGTCAGATCGC

154 TS-15 bp Interval-TS-miniCMV (Fig. 1c)

155 GTCCCCCTCCACCCACAGTGGGGACGTAAAGGGTTTACGTCCCTCCACCCACAGTGGGGACGTAGCTAGCGGTAGGCGGTGACGGTGGGAGGCTATATAAGCAGA
 156 GCTCGTTAGTGAACCGTCAGATCGC

157 TS-35 bp Interval-TS-miniCMV (Fig. 1c)

158 GTCCCTCCACCCACAGTGGGGACGTAACAACCACTACCTGAGCGTGCAGGGTTTACGTCCCTCCACCCACAGTGGGGACGTAGCTAGCGGTAGGCGGTACGGT

159 GGGAGGCCTATATAAGCAGAGCTCGTTTAGTGAACCGTCAGATCGC

160 TS-50 bp Interval-TS-miniCMV (Fig. 1c)

161 GTCCCTCCACCCACAGTGGGGACGTAACAACCACTACAGACCCCAACGAGAACTGAGCGTGCAGGGTTTACGTCCCTCCACCCACAGTGGGGACGTAGCTAGCG

162 GTAGGCGGTGACGGTGGGAGGCCTATATAAGCAGAGCTCGTTTAGTGAACCGTCAGATCGC

163 TS-100 bp Interval-TS-miniCMV (Fig. 1c)

164 GTCCCTCCACCCACAGTGGGGACGTAACAACCACTACAGACCCCTGAAATGGACTATGTAGAAGACAACTGTCCAGTGAATTTGCTTCAATCCAACGAGAACTGAG

165 CGTGCAGGGTTTACGTCCCTCCACCCACAGTGGGGACGTAGCTAGCGGTAGGCGGTGACGGTGGGAGGCCTATATAAGCAGAGCTCGTTTAGTGAACCGTCAGATC

166 GC

167

168 1 x TS-miniCMV (Fig. 1d)

169 CTGACGATACCGCGTGATGTGGGTGCGAATACGCGTAGTCCGGCTAGCGGTAGGCGGTGACGGTGGGAGGCCTATATAAGCAGAGCTCGTTTAGTGAACCGTCAGATC

170 GC

171 2 x TS-miniCMV (Fig. 1d)

172 CTGACGATACCGCGTGATGTGGGTGCGAATACGCGTAGTCCGTTGCGTATATACGCGTCTGACGATACCGCGTGATGTGGGCTAGCGGTAGGCGGTGACGGTGGGA

173 GGCCTATATAAGCAGAGCTCGTTTAGTGAACCGTCAGATCGC

174 3 x TS-miniCMV (Fig. 1d)

175 CTGACGATACCGCGTGATGTGGGTGCGAATACGCGTAGTCCGTTGCGTATATACGCGTCTGACGATACCGCGTGATGTGGGTGCGAATACGCGTAGTCCGTTGCGTA

176 TATACGCGGTCTGACGATACCGCGTGATGTGGGCTAGCGGTAGGCGGTGACGGTGGGAGGCCTATATAAGCAGAGCTCGTTTAGTGAACCGTCAGATCGC

177 4 x TS-miniCMV (Fig. 1d)

178 CTGACGATACCGCGTGATGTGGGTGCGAATACGCGTAGTCCGTTGCGTATATACGCGTCTGACGATACCGCGTGATGTGGGCTAGCGGTAGGCGGTGACGCCGATAT

179 TAATCGGGATCTGACGATACCGCGTGATGTGGGTGCGAATACGCGTAGTCCGTTGCGTATATACGCGTCTGACGATACCGCGTGATGTGGGCTAGCGGTAGGCGGT

180 TACGGTGGGAGGCCTATATAAGCAGAGCTCGTTTAGTGAACCGTCAGATCGC

181

182 CAG-scFv-NLS-P65-HSF1-Flag-WPRE-PolyA-CAG-dCas9-HA-10xGCN4-Flag-

183 WPRE-PolyA-PGK-PuroR-PolyA (Fig. 1f, Vector used to generate transgenic cell

184 line)

185 GACATTGATTATTGACTAGTTATTAATAGTAATCAATTACGGGGTCATTAGTTCATAGCCCATATATGGAGTTCGCGTTACATAACTTACGGTAAATGGCCCGCTGGCT

186 GACGCCCAACGACCCCGCCCATGACGCTCAATAATGACGTATGTCCCATAGTAACGCCAATAGGGACTTTCCATTGACGTCAATGGGTGGAGTATTACGGTAAACT

187 GCCCACTTGGCAGTACATCAAGTGTATCATATGCCAAGTACGCCCTATTGACGCTCAATGACGTAATGGCCCGCTGGCATTATGCCAGTACATGACCTTATGGGA

188 CTTTCCTACTTGGCAGTACATCTACGTATTAGTCATCGCTATTACCATGGTCGAGGTGAGCCCCACGTTCTGCTTCACTCTCCCCATCTCCCCCCTCCCCACCCCCAATT

189 TTGTATTATTATTTTTTAATTATTTTGTGCAGCGATGGGGGCGGGGGGGGGGGGGGCGCGCCAGGCGGGGCGGGGCGAGGGGCGGGGCGGGGCGAG

190 GCGGAGAGGTGCGGCGGCAGCAATCAGAGCGGCGCGTCCGAAAGTTTCTTTTATGCGCAGGCGCGCGCGCGCGCCCTATAAAAAGCAAGCGCGCGCGG

191 GCGGGAGTCGCTGCGTTGCCCTCGCCCCGTGCCCCGCTCCGCGCCGCCCTCGCGCCGCCGCCCGCGCTCTGACTGACCGGTTACTCCACAGGTGAGCGGGCGGGAC

192 GGCCCTTCTCTCCGGCTGTAATTAGCGCTTGTTAATGACGGCTCGTTTCTTTCTGTGGCTGCGTGAAAGCCTTAAAGGGCTCCGGAGAGGGCCCTTTGTGCGGGG

193 GGAGCGGCTCGGGGGTGCCTGCGTGTGTGTGCGTGGGAGCGCCGCTGCGGCCCGCTGCCCGCGGCTGTGAGCGCTGCGGGCGCGGCGCGGGGCTTGT

194 GCGCTCCGCGTGTGCGGAGGGGAGCGGGCGGGGGCGGTGCCCGCGGTGCGGGGGGCTGCGAGGGGAACAAAGGCTGCGTGCGGGTGTGTCGTGGGGG

195 GTGAGCAGGGGTGTGGGCGCGCGGTGCGGTGTAACCCCCCTGCACCCCCCTCCCGAGTGTCTGAGCACGGCCCGCTTGGGTGCGGGGTCTCGTGCGGG

196 CGTGCGCGGGGCTCGCCGTGCCGGCGGGGGTGGCGCAGGTGGGGTGC CGGCGGGGCGGGGCCCTCGGGCGGGGAGGGCTCGGGGAGGGGCGCGG

197 CGGCCCCGAGCGCGCGGCTGTCGAGGCGGGCGAGCCGAGCCATTGCCTTTATGGTAATCGTGCAGAGGGCGCAGGGACTTCCTTTGTCCAAATCTGGCG

198 AGCCGAAATCTGGGAGGCGCGCGCACCCCTCTAGCGGGCGGGGCAAGCGTGCGGCGCGGAGCAAGGAAATGGCGGGGAGGGCCTTCGTGCTGCGC

199 GCGCCGCGTCCCTTCTCATCTCCAGCTCGGGGCTGCCGACGGGGACGGCTGCCCTCGGGGGGACGGGCGAGGCGGGGTTGCGTCTGCGGTGTGACCG

200 CGGCTCTAGAGCCTCTGCTAACCATTGTCATGCCTTCTCTTTTCTACAGATCCTTAATATGGGCCCCGACATCGTGATGACCCAGAGCCCCAGCAGCCTGAGCGCCA

201 GCGTGGGCGACCGGTGACCATCACTGCGCGAGCAGCACCGCGCGCTGACCACAGCAACTACGCCAGTGGGTGCAGGAGAAGCCCGCAAGCTGTTCAAGGG

202 CCTGATCGGCGCACCAACAACCGCGCCCCGGGTGCCAGCGCTTACGCGCAGCCTGATCGGCGACAAGGCCACCTGACCATCAGCAGCTGCAGCCGAGG

203 ACTTGCCACCTACTTCTGCGCCTGTGTACAGCAACCACTGGGTTCGGCCAGGGCACCAAGGTGGAGCTGAAGCGCGGCGGCGGCGCAGCGCGCGCGCGG

204 AGCGGCGGCGGCGGCGAGCAGCGGCGGCGGCGAGGTGAAGTCTGTGAGAGCGCGCGCGCTGGTGACGCCCGGCGGCGCCTGAAGCTGAGCTGCGCCGTG

205 AGCGGCTTCAGCTGACCGACTACGGCGTAACTGGGTGCGCCAGGCCCCGGCGCGGCTGGAGTGGATCGGCGTGATCTGGGGGACGGCATACCGACTACAA

206 CAGCGCCTGAAGGACCGCTTCATCATCAGCAAGGACAACGGCAAGAACACCGTGTACCTGCAGATGAGCAAGTGCGCAGCGACGACACCGCCCTGTACTACTCGT

207 GACCGCGCTGTCTGACTACTGGGGCAGGGCACCTGGTGACCGTGAAGCTGAGCAGTACCCATACGATGTTCCAGATTACGCTGGTGAGGCGGAGGTTCTGGGGGAGGAG

208 GTAGTGGCGGTGGTGGTTCAGGAGGCGGGAAGCCCTAAGAAAAAGAGGAAGGTGGCGGCCGTGGATCCCTTCAGGCGAGATCAGCAACCAGGCCCTGGCTCTG

209 GCCCTAGTCCGTCAGTGCTGCGCCAGACTATGGTGCCCTAGTGCTATGGTGCTCTGCGCCAGCCACCTGCTCAGCCCTGTGCTGACCCAGGACACCCC

210 AGTCACTGAGCGCTCAGTGCCCAAGTCTACAGCGCGGCGAGGGGACTCTGAGTGAAGCTCTGCTGCACCTGCAGTTCGACGCTGATGAGGACCTGGGAGCTCTGC

211 TGGGGAACAGCACCGATCCCGGAGTGTTACAGATCTGGCTCCGTGGACAACCTGAGTTTCAGCAGCTGCTGAATCAGGGCGTGTCATGTCTCATAGTACAGCCGA

212 ACCAATGCTGATGGAGTACCCCGAAGCCATTACCCGGTGGTGACCGGCAGCCAGCGGCCCCCCGACCCGCTCCAATCCCTGGGAACAGCGGCTGCTCAATGG

213 GCTGTCCGAGATGAAGACTTCTCAAGCATCGTGATATGGACTTTAGTGCCTGCTGTACAGATTCTCTAGTGGGAGGGAGGAGGTGGAAGCGGCTTCAGCGTG

214 GACACCACTGCCCTGCTGGACCTGTTAGCCCCCTGGTGACCGTGCCCGACATGAGCCTGCCTGACCTTGACAGCAGCTGGCCAGTATCAAGAGCTCCTGCTCCCC

215 AGGAGCCCCCAGGCTCCCGAGGCGAGAAACAGCAGCCCGATTAGGGAAGCAGCTGGTGCACTACACAGCGCAGCCGCTGTTCTGCTGAGCCCCGGCTCCGTG

216 GACACCGGAGCAACGACTGCCGGTGCTTTGAGCTGGGAGAGGGCTCTACTTCTCCGAAGGGGACGGCTTGCCGAGGAGCCCACTCTCCCTGTGACAGGC

217 TCGGAGCTCCCAAAGCAAGGACCCACTGTCTCCGCTAGCGAGGGCAGAGGAAGTCTGCTAACATGCGATTACAAGACGATGACGATAAGTAAATCAACCTCTG

218 GATTACAAAATTTGTGAAGATTGACTGGTATTCTTAATATGTTGCTCTTTACGCTATGTGGATACGCTGCTTAATGCCCTTGTATCATGCTATTGCTCCCGTATGGC

219 TTTCAATTTCTCTCTTGATAAATCTGGTGTCTCTTTATGAGAGTTGTGGCCGTTGTGAGCAACGTGGCGTGGTGTGCACTGTGTTGCTGACGCAACCCCC

220 ACTGGTGGGGCATGCCACCACCTGTCACTCCTTCCGGGACTTTCGCTTCCCCCTCCCTATTGCCACGGCGGAACATATGCCGCGCTGCTTGCCTGCTGGAC

221 AGGGGCTCGGCTGTTGGGCACTGACAATCCGTGGTGTGTCGGGGAATCATGCTCTTCTGGCTGCTCGCTGTGTTGCCACCTGGATTCTGCGGGGACGTCT

222 TCTGCTACGTCCCTTCGGCCCTCAATCAGCGGACCTTCTTCCGCGGCTGCTGCGGGCTCTGCGGCTCTTCGCGTCTTCGCTTCGCCCTCAGACGAGTCGGATC

223 TCCCTTTGGGCGGCTCCCGCATCGATACCGTCGATCCTGTGCCTTAGTTGCGAGCATCTGTTGTTTGCCTTCCCCCGTGCCTTCTTGACCTGGAAGGTGCCAC

224 TCCCACTGTCTTCTCAATAAAATGAGGAAATTGCATCGCATTGTCTGAGTAGGTGTATTCTATTCTGGGGGTGGGGTGGGCGAGGACAGCAAGGGGAGGATTGG

225 GAAGACAATAGCAGGCATGCTGGGGATGCGGTGGGCTCTATGGGAATCCGAAGTTTTAATTAACGATCCTAGTTATTAATAGTAATCAATTACGGGTCATTAGTTCAT

226 AGCCCATATATGGAGTTCGCGTTACATAACTACGTTAAATGGCCCGCTGGCTGACCGCCCAACGACCCCCGCCATTGACGCTCAATAATGACGTATGTTCCATAGT

227 AACGCCAATAGGACTTTCATTAGCTCAATGGGTGGAGTATTACGTTAACTGCCCACTTGGCAGTACATCAAGTGATCATATGCCAAGTACGCCCCCTATTGACG

228 TCAATGACGGTAAATGGCCCGCTGGCATTATGCCAGTACATGACCTTATGGGACTTCTACTTGGCAGTACATCTACGTATTAGTATCGCTATTACCATGGTCGAGG

229 TGAGCCCCACGTTCTGCTTCACTCTCCCCATCTCCCCCCTCCCCACCCCAATTTGTATTATTATTTTAAATATTTTGTGACGCGATGGGGGCGGGGGGGGGGG

230 GGGGCGCGGCCAGGCGGGGCGGGGCGGGGCGAGGGGCGGGGCGAGGCGGAGAGGTGCGGCGGACGCCAATCAGAGCGGCGCTCCGAAAGTTTCTT

231 TATGGCGAGGCGCGCGCGCGGCCCTATAAAAAGCGAAGCGCGCGCGGGGAGTCGCTGCGTTGCCTTCGCCCCGTGCCCGCTCCGCGCGCCTCGCGC
 232 CGCCCCCGCCGGCTCTGACTGACCGCTTACTCCACAGGTGAGCGGGCGGACGGCCCTTCTCTCCGGGCTGTAATTAGCGCTTGGTTAATGACGGCTCGTTCTTT
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 234 GGCCCGCGCTGCCCGCGGCTGTGAGCGCTGCGGGCGCGCGCGGGCTTTGTGCGCTCCGCTGTGCGCGAGGGGAGCGCGCGGGGGCGGTGCCCGCGGTGC
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 236 CTCCCGAGTTGCTGAGCAGGCCCGCTCGGTGCGGGGCTCGTGCGGGGCTGGCGCGGGCTCGCGTGCCGGGCGGGGGTGCGCGCAGTGGGGTGCC
 237 GGGCGGGGCGGGCCGCTCGGGCCGGGAGGGCTCGGGGAGGGGCGCGCGGCCCGAGCGCGCGGTGTGAGGCGCGGCGAGCCGAGCATTGCCT
 238 TTTATGGTAATCGTGCAGAGGGCGCAGGGACTTCTTTGTCCAAATCTGCGGAGGCCAAATCTGGGAGGCGCCGCCACCCCCTTAGCGGGCGGGGCGAAGC
 239 GGTGCGGCGCGGAGGAAGAAATGGCGGGGAGGGCTTCTGCGTGCCTCGCGCGCGCTCCCTTCTCCATCTCAGCCTCGGGGTGCCGAGGGGACGGCT
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 244 CCAGACGGAAGAACCGATCTGCTATCTGCAAGAGATCTTACGCAACGAGATGGCAAGGTGGACGACAGCTTCTCCACAGACTGGAAGAGTCTTCTGTTGGAAG
 245 AGGATAAGAAGCACGAGCGGCACCCATCTTCGGCAACATCTGGAGCAGGTGGCTTACCACGAGAAGTACCCACCATCTACCACCTGAGAAAGAACTGGTGGAC
 246 AGCACCGACAAGGCGACCTGCGGTGATCTATCTGGCCCTGGCCACATGATCAAGTTCGGGGCCACTTCTGATCGAGGCGACCTGAACCCGACAACAGCGAC
 247 GTGGACAAGCTGTTTCAGCTGGTGCAGACTACAACAGCTGTTGAGGAAACCCATCAACGCGAGCGGCTGGACGCGCAAGGCCATCCTGTCTGCCAGACTG
 248 AGCAAGAGCAGCGGTGGAATCTGATCGCCAGCTGCCGCGGAGAAAGAAATGGCTTTCGCAACCTGATTGCCCTGAGCTGGGCTGACCCCAACTTC
 249 AAGAGCAACTTCGACCTGGCCGAGGATGCCAACTGCAGCTGAGCAAGGACCTACGACGACGACCTGGACAACCTGCTGGCCAGATCGGCGACCACTACGCCGA
 250 CCTGTTTCTGGCGCAAGAACTGTCCGACGCATCTGCTGAGCGACATCTGAGAGTGAACACCGAGATCACAAGGCCCCCTGAGCGCTCTATGATCAAGAGA
 251 TACGACGAGCACCAAGGACCTGACCTGCTGAAAGCTCTGTCGGCGAGCAGCTGCTGAGAAGTACAAGAGATTTTCTTCGACCAGAGCAAGAACGGCTACGCC
 252 GGCTACATCGATGGCGGAGCCAGCCAGGAAGTTCTACAAGTTCATCAAGCCATCTGGAAGAGTGGACGGCACCGAGGAAGTCTGCTGAAGCTGAACAGAGA
 253 GGACCTGCTGCGGAAGCAGCGGACCTTCGACAACGGCAGCATCCCCACCATGACCTGGGAGAGCTGCACGCCATTCTGGCGGCGAGGAAGATTTTACCATT
 254 CCTGAAGGACAACCGGAAAGATCGAGAAGATCTGACCTTCGCATCCCTACTACGTGGGCCCTTGGCCAGGGGAAACAGCAGATTCGCTGGATGACCAGAAA
 255 GAGCGAGGAAACCATCACCCCTGGAACCTCGAGGAAGTGGTGGACAAGGGCGCCAGCGCCAGAGCTTCATCGAGCGGATGACCAACTTCGATAAGAACCTGCCCA
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 258 ACTCCGTGAAATCTCCGCGTGGAAGATCGTTAACCGCTCCCTGGGCACATACCAGCATCTGCTGAAATATCAAGGACAAGGACTTCTTGACAATGAGGAAAA
 259 CGAGGACATTCTGGAAGATATCTGCTGACCTGACACTGTTGAGGACAGAGAGATGATCAGGAAACGGCTGAAACCTATGCCACCTGTCGACGACAAAGTAT
 260 GAAGCAGCTGAAGCGCGGAGATACACCGGTGGGGCAGGCTGAGCCGAAGCTGATCAACGGCATCCGGGACAAGCAGTCCGGCAAGACAATCTGGATTCTGTA
 261 AGTCCGACGGCTTCGCAACAGAACTTATGACGATGATCCACGACGACGCTGACCTTTAAAGAGGACATCCAGAAAGCCAGGTGTCGGCCAGGGCGATAGCC
 262 TGCACGAGCATTGCCAATCTGGCCGCGAGCCCCGCCATTAAGAAGGGATCTGACAGCAGTGAAGTGGTGGACGAGCTCGTGAAGTATGGGCGGCGACAAG
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 267 AATCTGACCAAGGCGAGAGAGGGCGCTGAGGAACTGGATAAGGCCGCTTTCATCAAGAGACAGCTGGTGAACCCGGCAGATCACAAGCAGTGGCACAGAT
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 269 CCAGTTTTACAAGTGCAGGATCAACAATACCACACGCCACGACGCTACCTGAACCGCGTCTGGGAACCGCCCTGATCAAAAAGTACCCTAAGCTGGAAGG
 270 CGAGTCTGTGACGGCGACTACAAGGTGTACGAGCTGCGGAAGATGATCGCCAAGAGCAGCAGGAAATCGCAAGGCTACCGCAAGTACTTCTTACAGCAACAT
 271 CATGAACTTTTTCAAGACCGAGATTACCCTGGCCAACGGCGAGATCCGGAAGCGGCTCTGATCGAGACAAACGGCGAAACAGGCGAGATCGTGTGGATAAGGGCC
 272 GGGACTTTGCCACCGTGGGAAAGTGTGTCTATGCCCAAGTGAATATCTGTAAGAACGAGGAGTGCAGACAGGCGGCTTACGAAAGAGTCTATCTGCCCAAGA
 273 GGAACAGCGACAAGCTGATCGCCAGAAAGAGGACTGGGACCCTAAGAAGTACGGCGGCTTCGACAGCCCCACCGTGGCTATTCTGTGCTGGTGGTGGCCAAAGTG

274 GAAAAGGGCAAGTCCAAGAACTGAAGAGTGTGAAAGAGCTGCTGGGATCACCATCATGGAAGAAGCAGCTTCGAGAAGAATCCCATGACTTTCTGGAAGCCAA
 275 GGGCTACAAAAGTGAAGGACCTGATCATCAAGCTGCCTAAGTACTCCCTGTTGAGCTGGAACGGCCGGAAGAGAATGCTGGCCTCTGCCGGCAACTGCA
 276 GAAGGAAACGAAGTGGCCCTGCCCTCCAATATGTGAACCTCTGTACCTGGCCAGCCACTATGAGAAGCTGAAGGGCTCCCCGAGGATAATGAGCAGAAACAGCT
 277 GTTTGTGGAACAGCACAAACTACTGGACGAGATCATCGAGCAGATCAGCGAGTTCTCCAAGAGAGTGATCCTGGCCGACGCTAATCTGGACAAGGTGCTGAGCGC
 278 CTACAACAAGCACAGAGACAAGCCTATCAGAGAGCAGGCCGAGAATATCATCCACCTGTTTACCCTGACCAATCTGGGAGCCCTGCCGCTTCAAGTACTTTGACACC
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 280 GGGAGGCGACGCCTATCCCTATGACGTGCCGATTATGCCAGCCTGGGAGCGGCTCCCCAAGAAAAACGCAAGGTGGAAGATCCTAAGAAAAAGCGGAAAGTG
 281 ACGGCATTGGTAGTGGGAGCAACGGCAGCAGCGGATCCAACGGTCCGACTGACGCCGCGGAAAGAGAACTTTTGAAGCAAGAATTATCATCTTGAGAACGAAGTGGCTC
 282 GTCTTAAGAAAGGTTCTGGCAGTGGAAGAAGTCTTTCAAAGAATTACCACCTGGAAGATGAGGTAGCTAGACTGAAAAAGGGGAGCGGAAGTGGGAGGAGTTGC
 283 TGAGCAAAAATTATCATTGGAGAACGAAGTAGCAGCTAAAGAAAGGTCGGATCGGGTGAAGGTTACTCTCGAAAAATTATCATCTCGAAACGAAGTGGCTCG
 284 GCTAAAAAGGGCAGTGGTTCTGGAGAAGAGCTATTATCTAAAACTACCACCTCGAAAATGAGGTGGCAGCTTAAAAAGGGAAGTGGCAGTGGTGAAGAGCTACT
 285 ATCCAAGAATTATCATCTTGAGAAGAGGTAGCGCTTTGAAGAAGGTTCCGGCTCAGGAGAGGAAGTCTCTGAAGAAGTATCATCTTGAAGATGAGGTGCTCGA
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 291 GCCCCGTGTAGGCAACGTGGCGTGGTGTGCACTGTGTTGCTGACGCAACCCCACTGGTGGGGCATTGCCACCACTGTGAGCTCCTTCCGGGACTTTCGTTTCC
 292 CCTCCTATTGCCACGGCGGAAGTATCGCCGCTGCTTGGCCGCTGCTGGACAGGGGCTCGGCTGTGGGCACTGACAATCCGTGGTGTGTGCGGGAAATCATC
 293 GTCTTTCTTGGTGTGCTGCTGCTGTGTCACCTGGATTCTGCGCGGAGCTCCTTCTGCTACGCTCCCTCGGCCCTCAATCCAGCGGACCTCCTTCCCGGGCTGCT
 294 GCGGCTCTGCGGCTCTTCCGCTCTTCCGCTTCCGCTCAGACGAGTCGGATCTCCCTTGGGCGCTCCCGCATCGATACCTGTGCTGCTCTTATGAGGAGTTGTG
 295 AGCCATCTGTTGTTTCCCCCTCCCCGTGCTTCTTACCTGGAAGGTGCCACTCCACTGTCTTCTTAATAAAATGAGGAAATGCATCGATTGTCTGAGTAGGT
 296 GTCACTTCTATTCTGGGGGTGGGGTGGGGCAGGACAGCAAGGGGAGGATTGGGAAGACAATAGCAGGCATGCTGGGGATGCGGTGGGCTCTATGGGAATCCGAAG
 297 TTCCTATTCTAGAAAGTATAGGAAGTTCAGGTCTGAAGAGGAGTTACGTCCAGCGCATGGGTAGGGGAGGCGCTTTCCCAAGGCAGTCTGGAGCATGCGCTTAG
 298 CAGCCCCGCTGGGCACTTGGCGCTACACAAGTGGCCTCTGGCCTCGCACATTCCATCCACCGGTAGGCGCAACCGGCTCCGTTCTTGGTGGCCCCCTCGCGCC
 299 ACCTTACTCTCTCCCTAGTCAGGAAGTCCCCCGCCCGAGCTCGCTGCTGACGAGCTGACAAATGGAAGTAGCACGTCTCACTAGTCTCGTGCAGATGGAC
 300 AGCACCGCTGAGCAATGGAAGCGGGTAGGCTTTGGGGCAGCGGCAATAGCAGCTTGTCTTCTGCTTCTGGGCTCAGAGGCTGGAAGGGGTGGTCCGGGGC
 301 GGGCTCAGGGCGGGCTCAGGGCGGGGCGGGCGCCGAAGTCTCCGAGGCGCCGATTCGACGCTTCAAAGCGCACGTGTCGCGCTGTTCTCTCTTC
 302 CTCATCTCCGGGCTTTCGACCTGACGCTGTGACAATAATCATCGGCATAGTATATCGGCATAGTATAATACGACAAGGTGAGGAAGTAAACATGACCGAGTACAA
 303 GCCACGCTGCGCTCGCCACCGCGACGAGCTCCCGAGGCGGTACGACCCCTGCGCGCGCTGCGGACTACCCGCCACGCGCACACCGTGCATCCGACCC
 304 GCCACATCGAGCGGGTACCGAGCTGCAAGAACTCTTCTCACGCGCTCGGGCTCGACATCGGCAAGGTGTGGTCTGCGGACGACGCGCGCGGTGGCGGTCTGG
 305 ACCACCGCGAGAGCGTGAAGCGGGGCGGTGTTCCCGAGATCGGCCCGCATGGCCGAGTTGAGCGGTTCCCGGCTGGCCGCGAGCAACAGATGGAAGGCC
 306 TCCTGGCGCCGACCGGCCAAGGAGCCGCGTGGTCTTGGCCACCTCGGCGTCTGCCCCGACCAAGGGCTGGGAGCGCGCTGCTGCTCCCCGGA
 307 GTGGAGGCGGCGGAGCGCGCGGGGTGCCGCTTCTGGAACCTCCGCGCCCGCAACCTCCCTTCTACGAGCGGCTGGGTTACCGTACCGCGGACGCTGCA
 308 GGTGCCCGAAGGACCGCGCACCTGTGTCATGACCCGCAAGCCGCTGCTGAAACCCGCTGATCAGCCTCGACTGTGCTTCTAGTTGCCAGCCATCTGTTGTTGCC
 309 CCTCCCCGTGCTTCTTACCTGGAAGGTGCCACTCCACTGTCTTCTTAATAAAATGAGGAAATGCATCGATTGTCTGAGTAGGTGTCTTCTTCTGGGGG
 310 GTGGGTGGGGCAGGACAGCAAGGGGAGGATTGGGAAGACAATAGCAGGCATGCTGGGGATGCGGTGGGCTCTATGG

311

312 3xSV40-3xTS-miniCMV-mCherry-WPRE-PolyA (Fig. 1f, Vector used to generate
 313 transgenic cell line)

314 AAC TTGTTATTGCGAGCTTATAATGGTTACAAATAAAGCAATAGCATCACAAATTTACAAATAAAGCATTTTTTCTACTGCATTCTAGTTGTGGTTTGTCCAAACTCATCAA
315 TGTATCTTATCATGTCTGGAAACTTGTTTATTGCGAGCTTATAATGGTTACAAATAAAGCAATAGCATCACAAATTTACAAATAAAGCATTTTTTCTACTGCATTCTAGTTGT
316 GGTTTGTCCAAACTCATCAATGTATCTTATCATGTCTGAAACTTGTTTATTGCGAGCTTATAATGGTTACAAATAAAGCAATAGCATCACAAATTTACAAATAAAGCATTTT
317 TTCTACTGCATTCTAGTTGTGGTTTGTCCAAACTCATCAATGTATCTTATCATGTCTGGATCGGAGGACGACTATTAAATCGGGATCCGTTTACGTCCTCCACCCACAGT
318 GGGACGTAACAAATGGACTATATCGTAGAAGAGTTTACGTCCTCCACCCACAGTGGGGACGTATCCAACGAGAAGTGAAGCTGCAGGGTTTACGTCCTCCACCC
319 CCACAGTGGGGACGTAGCTAGCGGTAGGCGGTGACGGTGGGAGGCCTATATAAGCAGAGCTCGTTTAGTGAACGCTCAGATCGCCTGGAACGCGTGCCACCTAGGTGA
320 GCAAGGGCGAGGAGGATAACATGGCCATCATCAAGGAGTTCATGCGCTTCAAGGTGCATGGAGGGCTCCGTGAACGGCCACGAGTTCGAGATCGAGGGCGAGGGC
321 GAGGGCCGCCCTACGAGGGCACCAGACGCCCAAGCTGAAGGTGACCAAGGTGGCCCCCTGCCCTTCGCTGGGACATCTGTCCCTCAGTTTATGTACGGCTCC
322 AAGGCTACGTGAAGCACCCCGCGACATCCCGACTACTTGAAGCTGTCCTTCCCCGAGGGCTTCAAGTGGGAGCGCTGATGAACCTCGAGGACGGCGCGTGGTG
323 ACCGTGACCCAGGACTCTCCCTGCAGGACGGCGAGTTCATCTACAAGGTGAAGCTGCGCGGCACCAACTTCCCTCCGACGGCCCCGTAATGCAGAAGAAGACCATG
324 GGCTGGGAGGCCTCTCCGAGCGGATGTACCCGAGGACGGCGCCCTGAAGGGCGAGATCAAGCAGAGGCTGAAGCTGAAGGACGGCGGCCACTACGACGCTGAGG
325 TCAAGACCACCTACAAGGCCAAGAAGCCCGTGCAGCTGCCCGGCGCCTACAACGTCAACATCAAGTTGGACATCACTCCCAACGAGGACTACACCATCGTGGAAAC
326 AGTACGAACGCGCCGAGGGCCGCACTCCACGGCGGCATGGACGAGCTGTACAAGTAAACCGGAATCAACCTCTGGATTACAAAATTTGTGAAAGATTGACTGGTAT
327 TCTTAAC TATGTTGCTCTTTTACGCTATGTGGATACGCTGCTTAAATGCCCTTGTATCATGCTATTGCTCCCGTATGGCTTTCATTTTCTCCTCTGTATAAATCCTGGTIG
328 CTGCTCTTTATGAGGAGTTGTGGCCCGTGTGACGGCAACGTGGCGTGGTGTGCACTGTGTTTGTGACGCAACCCCTACTGGTGGGGCATTGCCACCACTGTGAGCT
329 CCTTCCGGGACTTTCGCTTTCCTCCCTCCCTATTGCCACGGCGGAACTCATGCGCGCTGCCTTCCCCGCTGCTGGACAGGGGCTCGGCTGTTGGGCACTGACAATCCG
330 TGGTGTGTGCGGGGAAGCTGACGTCCTTTCCATGGCTGCTCGCTGTGTTGCCACCTGGATTCTGCGCGGGACGTCCTTCTGTACGTCCTTTCGCGCCCTCAATCCAGCG
331 GACCTTCTTCCCGCGGCTGCTGCCGGCTTGC GGCTCTTCCGCGTCTCCGCTTCCGCTCAGACGAGTGGATCTCCTTTGGCGGCTCCCGGCCACCGGTTAGG
332 GGCCCCGTTTAAACCCGCTGATCAGCCTCGACTGTGCCTTCTAGTTGCCAGCCATCTGTTGTTTCCCCCTCCCCGTCCTTCTTGACCTTGAAGGTGCCACTCCCACTG
333 TCCTTCTTAATAAAATGAGGAAATTCATCGCATTGTCTGAGTAGGTGTCTATTCTATTCTGGGGGTGGGGTGGGGCAGGACAGCAAGGGGGAGGATTGGGAAGACAA
334 TAGCAGGCATGCTGGGGATGCGGTGGGCTCTATGGC

336 HAL-miRNA-F-shRNA1-sgRNA-shRNA2-miRNA-R-HAR (Fig. 1f)

337 TCAAAAGGAGGGGAGAGGGGGTAAAAAATGCTGCACTGTGCGGCGAGGCCGGTGAGTGAGCGACGCGAGCCAATCAGCGCCCGCCGTCCGAAAGTTGCCTTTTA
338 TGGCTCGAGTGGCCGCTGTGGCGTCTATAAAACCCGGCGGCGCAACGCGCAGCCACTGTGAGTGCAGTCCACCCGCGAGCACAGCTTCTTGACGCTCCTCTGTTGC
339 CGGTCCACACCCGCCACCAGTAAGCAGGGACGCCGGGCCAGCGGGCCTTGCTCTCTCGTGGCTAGTACCTCACTGCAGGGTCTGAGGATCACTCAGAACGGACA
340 CCATGGGCGGGTGGAGGGTGGTGC CGGGCCGCGGAGCGGACACTGGCACAGCCAACTTACGCCTAGCGTGTAGACTCTTTGCAGCCACATCCCGGGGTAGACAC
341 TCGTGGGCCCGCTCCCGCTCGTGGGCTTGGGGACACACTAGGGTCGCGGTGTGGGCATTTGATGAGCCGGTGC GGCTTGGCGGTGTTAAAGCCGTATTAGG
342 TCCATCTTGAGAGTACACAGTATTGGGAACAGACGCTACGATCACGCCTCAATGGCCTCTGGGTCTTTGTCCAACCGGTTTGCCTATTGCGCTGCCGGGCGGGCGG
343 GCGGGCGGGCGGGCGGGCAGGGCCGGCTCGGCCGGGTGGGGCTGGGATGCCACTGCGCGTGC GCTCTCTATCACTGGGCATCAGGGCGGTGTGCGCTAGGGAG
344 GGAGCTCTTCTCTCCCCCTCTTCTAGTTAGCTGCGCGTGC GTAAGGTGAATATTAATTAACCTCGACTAGGGATAACAGGGTAATTGTTTGAATGAGGCTTCAGTACTT
345 TACAGAATCGTTGCTGCGACATCTTGGAACACTTGCTGGGATTACTTCTCAGGTTAAACCAACAGAAGGCTCGAAGAAGGTATATTGCTGTTGACAGTGAGCGCGACA
346 AGCTGGAGTACAAC TACAATAGTGAAGCCACAGATGTATTGTAGTTGTACTCCAGTGTGTCATGCCTACTGCCTCGGACTTCAAGGGCTACGATGTCCCTCCACCCAC
347 AGTGGTTTAAGAGCTATGTCTGGAACAGCATAGCAAGTTAAATAAGGCTAGTCCGTTATCAACTGAAAAAGTGGCACCGAGTCCGTTGCATCCAAGAAGGTATATTG
348 CTGTTGACAGTGAGCGCGAAGATCCGCCACAACATCGAGATAGTGAAGCCACAGATGTATCTCGATGTTGTGGCGGATCTTCATGCCTACTGCCTCGGACTTCAAGGGG
349 CTACTTTAGGAGCAATTATCTTGTTTACTAAAC TGAATACCTTGCTATCTCTTTGATACATTTTTACAAGCTGAATTAATGTTATAAATAAATCACTTGGCGCGCT
350 TGAGGCTGGGAGCGCGGCTGCCCGGGGTTGGCGAGGGCGGGGCCGTTGTCGGAAGGGGCGGGGTACAGTGGCACGGCGCCTGTTTGC GCTTCTGCTGGGTG
351 TGGTCGCTCCCGCGCGCGCACAGCCGCCGCTCGGCGCAGTGTAGGCGGAGCTTGCGCCCGTTTGGGAGGGGGCGGAGGTCTGGCTTCTGCCCTAGTCCGCCTC
352 CGGGCCAGCGTTTGCCCTTTATGGTAATAATGCGGCCGCTCGCGCTTCTTTGTCCTTGAGCTTGGGCGCGCGCCCTGGCGGCTCGAGCCCGCGGCTTCCCGGAA
353 GTGGGACAGGGCGGCGAGCGGCTGCTCTTGCGGCGCCGAGGTGACTATAGCCTCTTTTG GTGCTTGATAGTTCGCCATGGATGACGATATCGCTGCGCTGGTCGTCGAC
354 AACGGCTCCGGCATGTCAAAGCGGCTTCGCGGGCGACGATGCTCCCGGGCTGTATCCCTCCATCGTGGGCGGCCCTAGGCACCAAGTAAGTGACCTGTTACTTT

355 GGGAGTGGCAAGCCTGGGGTTTCTTGGGGATCGATGCCGGTGCTAAGAAGGCTGTTCCCTCCACAGGGTGTGATGGTGGGAATGGGTGAGAAGGACTCCTATGTGG
356 GTGACGAGGCCAGAGCAAGAGAGGTATCCTGACCTGAAGTACCCATTGAACATGGCATTGTTACCAACTGGGACGACATGGAGA

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358 HAL-5' splice site-sgRNA-Branch point-3' splice site-HAR (Fig. 1f)

359 TCAAAGGAGGGGAGAGGGGGTAAAAAATGCTGCACTGTGCGGCGAGGCCGGTGAGTGAGCGACGCGAGCCAATCAGCGCCCGCCGTTCCGAAAGTTGCCTTTTA
360 TGGCTCGAGTGGCCGCTGTGGCGTCTATAAAACCCGCGCGCAACGCGCAGCCACTGTCGAGTCGCGTCCACCCGCGAGCAGACGTTCTTTGACGCTCCTTCGTTGC
361 CGGTCCACACCCGCCACCAAGTAAGCAGGGACGCGGGGCCAGCGGGCCTTCGCTCTCTCGTGGCTAGTACCTCACTGCAGGGTCTGAGGATCACTCAGAACGGACA
362 CCATGGGCGGGTGGAGGGTGGTGCCGGGCCGCGAGCGGACACTGGCACAGCCAATTACGCTAGCGGTAGACTCTTTGAGCCACATCCCGCGGTGTAGACAC
363 TCGTGGGCCCCGCTCCCGCTCGGTGCGTGGGGCTTGGGGACACACTAGGGTCGCGGTGTGGGCATTGATGAGCCGGTGGCGCTTGGCGGTGTTAAAGCCGTATTAGG
364 TCCATCTTGAGAGTACACAGTATTGGGAACCAGACGCTACGATCACGCCTCAATGGCCTCTGGGTCTTTGTCCAAACCGGTTTGCCTATTCGGCTTGGCGGGCGGGCGG
365 GCGGGCGGGCGGGCGCGCAGGGCCGGCTCGGCCGGTGGGGCTGGGATGCCACTGCGCGTGCCTCTATCACTGGGCATCAGGGCGCGTGTGCGCTAGGGAG
366 GGAGCTCTCTCTCCCTCTCTCTAGTTAGTGCCTGCGTAAGGTGAAATATTAATTAAGTGTCCCTCCACCCACAGTGGTTAAGAGCTATGCTGGAACAGCA
367 TAGCAAGTTAAATAAGGCTAGTCGGTTATCAACTGAAAAAGTGGCACCAGTGGTCTGATTATTTCTTGCAAGGCGCGCTTGAGGGTGGGAGCGCGGTGCCCCG
368 GGGTTGGGCGAGGGCGGGGCCGTTGTCCGAAGGGCGGGGTACAGTGGCACGGGCGCCTGTTTGGCGTCTCTGCTGGGTGGTGCCTCCCGCGCGGCACAA
369 GCCGCCCTCGGCGAGTGTAGCGGAGCTTGCCCGCTTGGGAGGGGGCGAGGTGTGGCTTCTGCCCTAGGTCCGCTCCGGGCCAGCGTTTGCCTTTATGG
370 TAATAATGCGGCGGTGCTGCGTCTCTTTGTCCCTGAGCTTGGGCGCGGCCCTTGGCGGCTCGAGCCCGCGGCTTGGCGGAAGTGGGAGGGCGGCAGCGGCTGC
371 TCTTGGCGGGCCGAGGTGACTATAGCCTCTTTTGTGCTTGATAGTTCGCCATGGATGACGATATCGCTGCGTGGTCTGCGACAACGGCTCCGGCATGTGCAAGCC
372 GGCTTCGCGGGCGACGATGCTCCCGGGCTGATTCCCTCCATCGTGGGCCGCTTAGGCACAGGTAAGTGACCTGTTACTTTGGGAGTGGCAAGCTGGGGTTTC
373 TTGGGATCGATGCCGTGCTAAGAAGGCTGTTCCTTCCACAGGGTGTGATGGTGGGAATGGGTGAGAAGGACTCCTATGTGGGTGACGAGGCCAGAGCAAGAGAG
374 GTATCCTGACCTGAAGTACCCATTGAACATGGCATTGTTACCAACTGGGACGACATGGAGA

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376 HAL-tRNA-sgRNA-tRNA-HAR (Fig. 1f)

377 TCAAAGGAGGGGAGAGGGGGTAAAAAATGCTGCACTGTGCGGCGAGGCCGGTGAGTGAGCGACGCGAGCCAATCAGCGCCCGCCGTTCCGAAAGTTGCCTTTTA
378 TGGCTCGAGTGGCCGCTGTGGCGTCTATAAAACCCGCGCGCAACGCGCAGCCACTGTCGAGTCGCGTCCACCCGCGAGCAGACGTTCTTTGACGCTCCTTCGTTGC
379 CGGTCCACACCCGCCACCAAGTAAGCAGGGACGCGGGGCCAGCGGGCCTTCGCTCTCTCGTGGCTAGTACCTCACTGCAGGGTCTGAGGATCACTCAGAACGGACA
380 CCATGGGCGGGTGGAGGGTGGTGCCGGGCCGCGAGCGGACACTGGCACAGCCAATTACGCTAGCGGTAGACTCTTTGAGCCACATCCCGCGGTGTAGACAC
381 TCGTGGGCCCCGCTCCCGCTCGGTGCGTGGGGCTTGGGGACACACTAGGGTCGCGGTGTGGGCATTGATGAGCCGGTGGCGCTTGGCGGTGTTAAAGCCGTATTAGG
382 TCCATCTTGAGAGTACACAGTATTGGGAACCAGACGCTACGATCACGCCTCAATGGCCTCTGGGTCTTTGTCCAAACCGGTTTGCCTATTCGGCTTGGCGGGCGGGCGG
383 GCGGGCGGGCGGGCGGGCAGGGCCGGCTCGGCCGGTGGGGCTGGGATGCCACTGCGCGTGCCTCTATCACTGGGCATCAGGGCGCGTGTGCGCTAGGGAG
384 GGAGCTCTCTCTCCCTCTCTCTAGTTAGTGCCTGCGTAAGGTGAAATATTAATTAACAAAGCACCAGTGGTCTAGTGGTAGAATAGTACCTGCCACGGTA
385 CAGACCCGGGTTCGATCCCGGTGGTGCAATCCCTCCACCCACAGTGGTTAAGAGCTATGCTGGAACAGCATAGCAAGTTAAATAAGGCTAGTCGGTTATCAA
386 CTGAAAAAGTGGCACCAGTGGTGCACAAAGCACCAGTGGTCTAGTGGTAGAATAGTACCTGCCACGGTACAGACCCGGGTTCGATCCCGGTGGTGCAAGCG
387 CGCCTTGAGGTGGGAGCGCGCTGCCGGGTTGGGCGAGGGCGGGCGCTGTCCGAAGGGCGGGGTACAGTGGCACGGGCGCTTGTTCGCTCTCTGCT
388 GGGTGTGGTGCCTCCCGCGCGCACAAGCCGCCGTCGGCGCAGTGTAGGCGGAGCTTGCGCCGTTTGGGAGGGGGCGAGGTGCGCTTCTGCCCTAGGTC
389 CGCTCCGGGCCAGCGTTTGCTTTTATGTAATAATGCGCGGCTGTGCGCTTCTTTGCTCCCTGAGCTTGGGCGCGGCCCTTGGCGGTGAGCCCGCGGGTTGC
390 CGGAAGTGGGAGGGCGGACGGCTGCTTGGCGGGCCGAGGTGACTATAGCCTCTTTTGTGCTTGATAGTTCGCCATGGATGACGATATCGTGCCTGGTGC
391 TCGACAACGGCTCCGGCATGTGCAAGCCGGCTTCGCGGGCGACGATGCTCCCGGGCTGTATTCCCTCCATCGTGGGCGGCCCTAGGCACAGGTAAGTGACCTGT
392 TACTTTGGGAGTGGCAAGCCTGGGGTTTCTTGGGATCGATGCCGTGCTAAGAAGGCTGTTCCTTCCACAGGGTGTGATGGTGGGAATGGGTGAGAAGGACTCCTA
393 TGTGGGTGACGAGGCCAGAGCAAGAGAGGTATCCTGACCTGAAGTACCCATTGAACATGGCATTGTTACCAACTGGGACGACATGGAGA

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395 Rosa26-HAL-Insulator-TRE3G promoter-EGFP-tRNA-sgRNA-tRNA-BGH PolyA-

396 Efla-Tet-on3G -Rosa26-HAR (Fig. 6e)

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CCTGTCAGTTAACGGCAGCCGAGTGCGCAGCCGCCGGCAGCCTCGCTCTGCCCACTGGGTGGGCGGGAGGTAGGTGGGTGAGGCGAGCTGGACGTGCGGGCGC
GGTCGGCCTCTGGCGGGGCGGGGAGGGGAGGGGAGGGTCAGCGAAAGTAGCTCGCGCGCAGCGGCCGCCACCCTCCCTTCTCTGGGGGAGCTGTTTTACCCGC
CGCCGGCCGGGCTCTGCTGCTGATTGGCTCTGGGGGCCAGAAAAGTGGCCTTGCCATTGGCTGTTCTGTGAAGTTGAGTCCATCCGCGGCCAGCGGGGGCG
GCGAGGAGGCGCTCCAGGTTCCGGCCCTCCCTCGGCCCGCGCCGAGAGTCTGGCGCGCGCCCTGCGCAACGTGGCAGGAAGCGCGCTGGGGCGGGGA
CGGGCAGTAGGGCTGAGCGGCTCGGGGCGGGTGCAAGCACGTTCCGACTTGAGTTGCTCAAGAGGGGCGTGTGAGCCAGACCTCCATCGCGCACTCCGGGAG
TGGAGGGAAGGAGCGAGGGCTCAGTTGGGCTGTTTTGAGGCGAGGAAGCACTGTCTCCAAAGTCGCTCTGAGTTGTTATCAGTAAGGAGAGCTCAGTGAGTAGG
CGGGGAGAAGGCCGCACCTTCTCCGAGGGGGGAGGGGAGTGTGCAATACCTTCTGGGAGTTCTGCTGCCTCCTGGCTTCTGAGGACCGCCCTGGGCTGGGA
GAATCCCTTCCCTTCTCCTCGTATGCAACTCCAGTCTTTAGAGGCGCGCTGAGGACAGCCCCCAAGCCCCAGGAGTGAATTACGTCCTCTCC
CGCTAGGGGGCAGCAGCAGCGCCCGGGGCTCCGCTCCGGTCCGCGCTCCCCCGCATCCCCGAGCCGGCAGCGTGGGGGACAGCCCGGCACGGGGAAGGT
GGCAGGGGATCGTTTCTCTGAACGCTTCTCGCTGCTTTGAGCTGCGAGACACTGGGGGATACGGGAAAAGGCCTCCACGGCCACTAGTCTTCTGCTTCAAG
AATTCCTCGAGTTTACTCCCTATCAGTGATAGAGAAGCTATGAAGAGTTTACTCCCTATCAGTGATAGAGAAGCTATGAGACTTACTCCCTATCAGTGATAGAGAAGT
ATAAGGAGTTTACTCCCTATCAGTGATAGAGAAGCTATGACCACTTACTCCCTATCAGTGATAGAGAAGCTATCTACAGTTTACTCCCTATCAGTGATAGAGAAGTATA
TCCAGTTTACTCCCTATCAGTGATAGAGAAGCTATAAGCTTTAGGCGTGTACGGTGGGCGCTATAAAGCAGAGCTCGTTTAGTAACCGTCAGATCGCCTGGAGCAAT
TCCACAACACTTTTGTCTTATACCAACTTTCGTACCACTTCTACCTCTGTAAGGCTAGAGGATGCCGCGCTCCTTCTGGTCAGGAAGCCGTCGACCCCCGCGCG
AAGCCCAACTATAGCGAGCTGCAGGAATGGTGAGCAAGGCGAGGAGCTGTTACCGGGTGGTGCCATCTGGTCGAGCTGGACGGCGACGTAACGGCCACAAG
TTCAGCGTGTCCGGCGAGGGCGAGGGGATGCCACCTACGGCAAGCTGACCTGAAGTTCTATGCAACACCGGAAGCTGCCCTGCCCTGGCCACCTCTGTGACC
ACCTGACCTACGGCGTGAGTGCTTACGGCTACCCGACCATGAAGCAGCAGACTTCTCAAGTCCGCGATGCCGAAGGCTACGTCAGGAGCGCACCATC
TTCTCAAGGACGACGGAACATAAGACCCGCGCGAGGTGAAGTTCAGGGCGACACCTGGTGAACCGCATCGAGCTGAAGGCGATCGACTTCAAGGAGGACGG
CAACATCCTGGGCGACAAGCTGGAGTCAACTACAACGCCACAACGCTATATCATGCGCGACAAGCAGAAGAACGGCATCAAGGTGAAGTCAAGTCCGCCACAA
CATCGAGGACGGCAGCGTGAGCTGCGCGACCTACGAGCAGAACCCCCATGGCGACGGCCCGTGTGCTGCGCGACAACCACTACCTGAGCAGCCAGTCCG
CCCTGAGCAAAGACCCCAACGAGAAGCGCGATCACATGGTCTGCTGGAGTTCTGACCGCCGCGGATCACTCTCGCATGGACGAGCTGTACAAGTAA
AACAAGCACCAGTGGTCTAGTGGTAGAATAGTACCCTGCCACGGTACAGACCCGGGTTCGATTCCCGGTGGTGCAATCCCTCCACCCACAGTGGTTAAGAGCTA
TGCTGGAACACGATAGCAAGTTAAATAAGGCTAGTCCGTTATCAACTGAAAAAGTGGCACCAGTCCGTGCAACAAGCACCAGTGGTCTAGTGGTAGAATAGTAC
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AGTCCCCGAGAAGTTGGGGGAGGGTCGGCAATTGAACGGGTGCTAGAGAAGTGGCGGGGTAACTGGGAAAGTATGTCGTGTACTGGCTCCGCTTTTCC
CGAGGTGGGGGAGAACCGTATATAAGTGCAGTAGTCGCGTGAACGTTCTTTTTCGAACGGGTTGCCCGCAGAACACAGCTGAAGCTTCGAGGGGCTCGCATCTCT
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AATTACTCAATGGAGTGGTATCGAAGGCTGACGACAAGGAACTCGTCAAAAGTGGGAGTTGAGCAGCTACCTGTACTGGCAGTGAAGAACAAGCGGGGCC
TGCTCGATGCCCTGCCAATCGAGATGCTGGACAGGCATCATACCACTCTCGCCCTGGGAAGGCGAGTCATGGCAAGACTTTCTCGGAACAACGCCAAGTCATACCG
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ACACCTACCAACGATTCTATGCCCCACTTCTGAAACAAGCAATTGAGCTGTCGACCGGCAGGAGCCGAACCTGCCTTCTTTCGGCCTGGAACATATATGTGG
CCTGGAGAAACAGCTAAAGTGCAGAAAGCGCGGGCGACCGACGCCCTTGACGATTTTGAAGTACATGCTCCAGCGGATGCCCTTGACGACTTTGACCTTGATATG

435 CTGCCTGCTGACGCTCTTGACGATTTTGACCTTGACATGCTCCCGGGACACACGGGTAGGGCGCGCCAGATGGGCGGGAGTCTTCTGGGCAGGCTTAAAGGCTAACCT
436 GGTGTGTGGGCGTTGTCCTGCAGGGGAATTGAACAGGTGTAATTTGGAGGGACAAGACTTCCACAGATTTTCGGTTTTGTGGGAAGTTTTTAATAGGGGCAAATAA
437 GGAAATGGGAGGATAGGTAGTCATCTGGGTTTTATGCAGCAAACTACAGGTTATTATTGCTTGTGATCCGCCTCGGAGTATTTCCATCGAGGTAGATTAAAGACAT
438 GCTCACCCGAGTTTTATACTCTCCTGCTTGAGATCCTTACTACAGTATGAAATTACAGTGTGCGAGTTAGACTATGTAAGCAGAATTTAATCATTTTTAAAGAGCCAGT
439 ACTTCATATCCATTTCTCCCGCTCCTTCTGCAGCCTTATCAAAGGTATTTTAGAACACTCATT
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