Table S1. Primer sequences

| Primer | Sequence (5' to 3') | Applications |
|---|---|---|
| inverse rev | gaagatgatctcatcgttgttgaacttatc | Construction |
| inverse fw | TAAGGGCCCTTCGAAGGTAAGCCTATCCCT | Construction |
| insert P2A fw | gatgagatcatcttcGGAAGCGGAgctactaacttcagcctgctgaagcaggctggagacgtggaggagaaccctggacctATGGGACCTAAGAAAAAGAGGAAGGTGGCG | Construction |
| insert T2A fw | gatgagatcatcttcGGAAGCGGAgagggcagaggaagtcttctaacatgcggtgacgtggaggagaatcccggccctATGGGACCTAAGAAAAAGAGGAAGGTGGCG | Construction |
| insert rev | TTCGAAGGGCCCTTAgaagatgatctcatcgttgttgaacttatc | Construction |

Table S2. Primer sequences

| Primer | Sequence (5' to 3') | Applications |
|---|---|---|
| AAVS-1 Fw | cgatgtccggagaggatggc | T7EI assay |
| AAVS-1 Rv | gatggtaaggaggactgcatgg | T7EI assay |
| 2027ot1 fw | GAAGAGAATGAAGCGGCGGC | Off-target analysis |
| 2027ot1 rv | ACTGACACCGAGACAGAGCA | Off-target analysis |
| 2027ot2 fw | GAGGAGGCTCCCATCTGGCA | Off-target analysis |
| 2027ot2 rv | TGTCTGAGGCAGGGGTAACC | Off-target analysis |
| 9299v2ot1 fw | CCGCGCAGGATCCATTTTG | Off-target analysis |
| 9299v2ot1 rv | CATCTTCCAGCACCTGCCAC | Off-target analysis |
| 9299v2ot2 fw | GGGCTCCAAGCAGACTGAAGT | Off-target analysis |
| 9299v2ot2 rv | CCCACCGGGAGAAGCTTATC | Off-target analysis |