

**Table S1 All primer sequences used in this study.**

| Application          | Primer ID | Primer name                          | sequence                                     |
|----------------------|-----------|--------------------------------------|----------------------------------------------|
| pJET1.2-STOP-dsRed   |           |                                      |                                              |
|                      | XZ82      | attp1-SA sense                       | CACACCAGGTCTCA ctgcAAGCTTCCCAGGTCAGAAG       |
|                      | XZ83      | attp1-SA antisense                   | CACACCAGGTCTCA ggtgTTAGTTAGTTAGACCTGCGG      |
|                      | XZ84      | sv40 sense                           | CACACCAGGTCTCA caccGCGATCCAGACATGAT          |
|                      | XZ85      | sv40 antisense                       | CACACCAGGTCTCA gcccaGACTAGTTGATCATA ATCAGCCA |
|                      | XZ86      | 3p3-DsRed-SV40 sense                 | CACACCAGGTCTCA tggcTCGCCCGGGATCTAA           |
|                      | XZ87      | 3p3-DsRed-SV40 antisense             | CACACCAGGTCTCA tattTCACACCGCATATGCC          |
|                      | XZ88      | attP2 sense                          | CACACCAGGTCTCA aataTTCAACCCCTTGTGTCATGTCGG   |
|                      | XZ89      | attP2 antisense                      | CACACCAGGTCTCA ttccGCGGCCAGGTCAGAAG          |
|                      | XZ195     | STOP-dsRed sense                     | ACGTCTCA ccagTCTCGAAGCTTCCCAGGTC             |
|                      | XZ196     | STOP-dsRed antisense                 | ACGTCTCA aacaGTCTCTCGTTCCGCGGC               |
| <i>salm</i> exon 1   |           |                                      |                                              |
|                      | XZ142     | exon 1 left arm fragment 1 sense     | CACACCAGTCTCA ggacGGGAGCACCATACACA           |
|                      | XZ143     | exon 1 left arm fragment 1 antisense | CACACCAGTCTCA atagACGTTTATGAAACTTGTTCGG      |
|                      | XZ144     | exon 1 left arm fragment 2 sense     | CACACCAGTCTCA ctatCAGGTAAAAACAGCGACTGC       |
|                      | XZ145     | exon 1 left arm fragment 2 antisense | CACACCAGTCTCA ctggCCTTTGCGCGTGTTA            |
|                      | XZ148     | exon 1 right arm sense               | CACACCAGTCTCA tgttAGGCAATTTAATACAAATTCAAA    |
|                      | XZ149     | exon 1 right arm antisense           | CACACCAGTCTCA agaaTTGGCTTTGCACTGAC           |
| <i>salm</i> intron 1 |           |                                      |                                              |
|                      | XZ152     | intron 1 left arm sense              | CACACCAGTCTCA ggacGACTTCTGGCGGCTGT           |
|                      | XZ153     | intron 1 left arm antisense          | CACACCAGTCTCA ctggCCTCTGATGCCACAAT           |

|                     |        |                                       |                                                               |
|---------------------|--------|---------------------------------------|---------------------------------------------------------------|
|                     | XZ154  | intron 1<br>right arm<br>sense        | CACACCACGTCTCA tgttGGACATATCTATACATTTAAACCAT                  |
|                     | XZ155  | intron 1<br>right arm<br>antisense    | CACACCACGTCTCA gcatTAAGTTATGCGAGCGC                           |
| <i>salm</i> exon 3  |        |                                       |                                                               |
|                     |        | Oligo Name                            | Sequence                                                      |
|                     | XZ157  | exon 3 left<br>arm sense              | CACACCACGTCTCA cggaCTGCGGCGAGGACTACG                          |
|                     | XZ158  | exon 3 left<br>arm<br>antisense       | CACACCACGTCTCA ctggAAACCCCAATAAATTCAG                         |
|                     | XZ159  | exon 3 right<br>arm sense             | CACACCACGTCTCA tgttGCCCTAATGACCATCTT                          |
|                     | XZ160  | exon 3 right<br>arm<br>antisense      | CACACCACGTCTCA gcacATTCCAAATAGATTATTAACGTG                    |
|                     |        |                                       |                                                               |
| <i>bent</i> exon 11 | wk049  | <i>bent</i> left arm<br>sense         | AACGTCTCG tgatCTAGCCGTCAAATAGGTCTTCGG                         |
|                     | wk050  | <i>bent</i> left arm<br>antisense     | AGCGTCTCT gcttGGTGGGCATATACGCACTC                             |
|                     | wk051  | <i>bent</i> right<br>arm sense        | TGCGTCTCA aacgGCAGTTCCTGCACTTCTTCG                            |
|                     | wk052  | <i>bent</i> right<br>arm<br>antisense | GTCGTCTCT acacGGTATTTGGCGGAAGAGCAGC                           |
| pBS-backbone        |        |                                       |                                                               |
|                     | XZ150  | pBS-GGAC-<br>TTCT sense               | CACACCACGTCTCA ttctGCAGGTGGAGCTCCAGCTTT                       |
|                     | XZ151  | pBS-GGAC-<br>TTCT<br>antisense        | CACACCACGTCTCA gtccGTACCCAATTCGCCCT                           |
|                     | XZ156  | pBS-GGAC-<br>ATGC sense               | CACACCACGTCTCA atgcAGGTGGAGCTCCAGCTTT                         |
|                     | XZ151  | pBS-GGAC-<br>ATGC<br>antisense        | CACACCACGTCTCA gtccGTACCCAATTCGCCCT                           |
|                     | XZ161  | pBS-CGGA-<br>GTGC sense               | CACACCACGTCTCA gtgcAGGTGGAGCTCCAGCTTT                         |
|                     | XZ162  | pBS-CGGA-<br>GTGC<br>antisense        | CACACCACGTCTCA tccgTACCCAATTCGCCCT                            |
| <i>salm</i> sgRNAs  |        |                                       |                                                               |
|                     | sgRNA1 | gene-specific<br>targeting<br>oligo   | TAATACGACTCACTATAG TGGGAAACGGTAGTACCGC GTTTTAGAGCTAGAAAATAGC  |
|                     | sgRNA2 | gene-specific<br>targeting<br>oligo   | TAATACGACTCACTATAG GCACTTTTGTGTTTTGCCGT GTTTTAGAGCTAGAAAATAGC |

|                       |         |                                       |                                                                                 |
|-----------------------|---------|---------------------------------------|---------------------------------------------------------------------------------|
|                       | sgRNA3  | gene-specific targeting oligo         | TAATACGACTCACTATAG AGAGGCAGAAATCGTAG GTTTTAGAGCTAGAAATAGC                       |
|                       | sgRNA4  | gene-specific targeting oligo         | TAATACGACTCACTATAG CAGTTTTCCCCCGATTATA GTTTTAGAGCTAGAAATAGC                     |
|                       | sgRNA5  | gene-specific targeting oligo         | TAATACGACTCACTATAG CAAACGTTAACAGCTTCTAT GTTTTAGAGCTAGAAATAGC                    |
|                       | sgRNA6  | gene-specific targeting oligo         | TAATACGACTCACTATAG CAAGATCGCAAAGGGGCGC GTTTTAGAGCTAGAAATAGC                     |
|                       | sgRNA7  | gene-specific targeting oligo         | TAATACGACTCACTATAG TTTATTGGGGGTTTTCTAA GTTTTAGAGCTAGAAATAGC                     |
|                       | sgRNA8  | gene-specific targeting oligo         | TAATACGACTCACTATAG ATTTAAACCAGAAAAGTAT GTTTTAGAGCTAGAAATAGC                     |
|                       | sgRNA9  | gene-specific targeting oligo         | TAATACGACTCACTATAG AAGATGGTCATTAGGGGCAT GTTTTAGAGCTAGAAATAGC                    |
|                       | sgRNA10 | gene-specific targeting oligo         | TAATACGACTCACTATAG TATTTAATAAGATGGTCATT GTTTTAGAGCTAGAAATAGC                    |
|                       | sgRNA11 | gene-specific targeting oligo         | TAATACGACTCACTATAG CAAGTTTTAGAGCGAAATGA GTTTTAGAGCTAGAAATAGC                    |
|                       | sgRNA12 | gene-specific targeting oligo         | TAATACGACTCACTATAG CACGTACACCATACTAAGG GTTTTAGAGCTAGAAATAGC                     |
|                       |         |                                       |                                                                                 |
| <i>bent</i> sgRNAs    | sg_1    | gene-specific targeting oligo         | TAATACGACTCACTATAG ACCAGTCGTTCTGTTATAA GTTTTAGAGCTAGAAATAGC                     |
|                       | sg_3    | gene-specific targeting oligo         | TAATACGACTCACTATAG ACAATTATCGATTAATCACT GTTTTAGAGCTAGAAATAGC                    |
|                       | XZ100   | scaffold oligo                        | AAAAGCACCGACTCGGTGCCACTTTTTCAAGTTGATAACGGACTAGCCTTATTTAACTTGCTATTTCTAGCTCTAAAAC |
|                       | XZ101   | antisense primer for sgRNA production | AAAAGCACCGACTCGGTGCC                                                            |
|                       |         |                                       |                                                                                 |
| attB exchange plasmid |         |                                       |                                                                                 |

|                            |                  |                        |                                                                                                                                                                                                                       |
|----------------------------|------------------|------------------------|-----------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|
|                            | FRT-2xTY1-FRT-V5 | IDT gBlock sequence    | GGATCCGGAAGTTCCTATTCCGAAGTTCCTATTCTCTAGAAAGTATAGGAACTTCGAGGTCCACACTAATCAAGACCCCTGGATGCCGAGGTGCACACCAACCAGGACCTCTGGACcgGAAGTTCCTATTCCGAAGTTCCTATTCTCTAGAAAGTATAGGAACTTCgGGCAAGCCATCCCCAACCCCTGCTGGCCTGGATAGCACCAGGATCC |
|                            | 2xTY1-V5         | IDT gBlock sequence    | GGATCCGGAGGTCCACACTAATCAAGACCCCTGGATGCCGAGGTGCACACCAACCAGGACCTCTGGACGGAGTTCGGTGAAGCGGAGGTAGCGGCGGATCGGGCAAGCCATCCCCAACCCCTGCTGGCCTGGATAGCACCAGGATCC                                                                   |
|                            |                  |                        |                                                                                                                                                                                                                       |
| pDCC6-gRNAs_cloning oligos |                  |                        |                                                                                                                                                                                                                       |
|                            | XZ123            | sgRNA1 sense oligo     | CTTCGTGGGAAACGCGTAGTACCGC                                                                                                                                                                                             |
|                            | XZ124            | sgRNA1 antisense oligo | AAACGCGGTACTACGCGTTCCCA                                                                                                                                                                                               |
|                            | XZ125            | sgRNA3 sense oligo     | CTTCGCAGAGGCAGAAATCGTAGGT                                                                                                                                                                                             |
|                            | XZ126            | sgRNA3 antisense oligo | AAACACCTACGATTTCTGCCTCTG                                                                                                                                                                                              |
|                            | XZ129            | sgRNA7 sense oligo     | CTTCGTTTATTGGGGGTTTCTAA                                                                                                                                                                                               |
|                            | XZ130            | sgRNA7 antisense oligo | AAACTTAGAAAACCCCAATAAA                                                                                                                                                                                                |

|                     |       |                              |                           |
|---------------------|-------|------------------------------|---------------------------|
|                     | XZ131 | sgRNA9<br>sense oligo        | CTTCGAAGATGGTCATTAGGGGCAT |
|                     | XZ132 | sgRNA9<br>antisense<br>oligo | AAACATGCCCTAATGACCATCTT   |
|                     |       |                              |                           |
| HDR<br>verification |       |                              |                           |
|                     | XZ109 |                              | AGCGAGTGTGTGGCATAATTG     |
|                     | XZ120 |                              | CCACAAGGCCCTGAAGCTGA      |
|                     | XZ144 |                              | CAGGTAAAAACAGCGACTGC      |