**Supplemental Table 2: oligonucleotides**

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| oligo # | gene and use | sequence |
| 1665 | *his-3* (in pBM61) Southern probe FP | 5' GACGGGGTAGCTTGGCCCTAATTAACC |
| 3128 | *his-3* (in pBM61) Southern probe RP | 5' CGATTTAGGTGACACTATAG |
| 1877 | 8:A6 Southern probe FP | 5’ TGGTTGGTCGATTGTGGTGG |
| 1878 | 8:A6 Southern probe RP | 5’ TTTTGAGGATCCGCCATCCG |
| 1652 | *bar* Southern probe FP | 5' CCGTCGACAGAAGATGATATTGAAGGAGC |
| 1653 | *bar* Southern probe RP | 5' AATTAACCCTCACTAAAGGGAACAAAAGC |
| 2894 | *hph* Southern probe FP | 5’ ccgtcgacagaagatgatattgaaggagc |
| 2354 | *hph* Southern probe RP | 5’ CCGCTCGAGCTATTCCTTTGCCCTCGGAC |
| 5752 | NCU04771 upstream Southern probe FP | 5’ CCAGTGCTCAGCTTAGGCCC |
| 5753 | NCU04771 upstream Southern probe RP | 5’ GGGGATCAGCCACTCGAGCG |
| 5792 | 2:B3 Southern probe FP | 5' CCATCCAAGTGGCTTGAACTCC |
| 5793 | 2:B3 Southern probe RP | 5' AGATCTTCTATACATTGCTGAC |
| 5808 | NCU04772 upstream Southern probe FP | 5’ GATCATCAGATCACGAGACGGC |
| 5809 | NCU04772 upstream Southern probe RP | 5’ CGATCTTCTTGGACGACGACG |
| 5514 | *LexA Operator* at *his-3;* Southern probe - FP | 5’ CGATGCGgaattcaagcttgatatctatcgatag |
| 5515 | *LexA Operator* at *his-3;* Southern probe - RP | 5’ acttcgaatagggcgaattgg |
| 1971 | *dim-5* amplification - FP | 5’ ATAAGAATGCGGCCGCCCGTTTTCTTGGGCAGC |
| 1958 | *dim-5* amplification - RP | 5’ GACTAGTGTAGATGGCGCAGAC |
| 1474 | *dim-5* sequencing - FP | 5’ GGAATTCCGAGTAGGCTGCTCCTGCG |
| 1477 | *dim-5* sequencing - RP | 5’ CGGGATCCTAGCCACGCTCTACCACTCGGT |
| 4689 | *dim-5* re-sequencing - FP | 5’ GACCAGAACTTCAACAACCC |
| 1475 | *dim-5* re-sequencing - FP | 5’ GGAATTCCGGACCGTGCCCTTGCAGAT |
| 4313 | *dim-7* amplification - FP | 5’ GATCGAGCGGCCGCCGAAGACGCCCTCGGCGAGG |
| 4314 | *dim-7* amplification - RP | 5’ GATCGAGGATCCAGCTAGCGAACAAACAGGAGC |
| 4393 | *dim-7* sequencing - FP | 5' CCAGAGTTCCATGAAACTCG |
| 4394 | *dim-7* sequencing - FP | 5' CACGGTGAAAGAAGAAGTCG |
| 4395 | *dim-7* sequencing - FP | 5' CACATATAAGTCGCTTGTCC |
| 4690 | *dim-7* re-sequencing - RP | 5’ GGTGACCTTTCCGAGCCGCC |
| 4691 | *dim-7* re-sequencing - RP | 5’ ACTTCATCCTTTGACTCGGC |
| 4692 | *dim-7* re-sequencing - RP | 5’ AGCTAACAGAAACTGTGCCC |
| 4315 | *dim-8* amplification - FP | 5’ GATCGAGCGGCCGCACTTTCAAGACGTTTGTGCG |
| 4316 | *dim-8* amplification - RP | 5’ GATCGAGAATTCGGGCGGTGTTCCGGAGACGG |
| 4753 | *dim-8* sequencing - FP | 5’ ACGTCTCGCGACATACTGCCTAT |
| 4754 | *dim-8* sequencing - FP | 5’ ACGTCTTCCAACGAAACCAAGCTGGC |
| 4755 | *dim-8* sequencing - FP | 5’ ACGTCTAGTCTTACACTCCACGC |
| 4756 | *dim-8* sequencing - FP | 5’ ACGTCTACCCCAGTCTTATCTACGGC |
| 4757 | *dim-8* sequencing - FP | 5’ ACGTCTCTGGTCGAGTACGTCCCGGC |
| 4693 | *dim-8* re-sequencing - RP | 5’ GTCCTCAGCCGTCACAGCCG |
| 4694 | *dim-8* re-sequencing - RP | 5’ GATGCTGTAGGTCCATCCCG |
| 4318 | *dim-9* amplification - FP | 5’ GATCGAGCGGCCGCCTACCCTAGGTTGTTCCACG |
| 4319 | *dim-9* amplification - RP | 5’ GATCGAACTAGTGCGTGGCATCGAGCTCATGG |
| 4656 | *dim-9* sequencing - FP | 5' GCAAGATGTAATGCTTGAGC |
| 3855 | *dim-9* sequencing - FP | 5’ GACCAGCAAAACATTTGAAAATG |
| 3158 | *dim-9* sequencing - FP | 5’ tgttcccatttgctcccctt |
| 3159 | *dim-9* sequencing - FP | 5’ gaagaagagcagaggccgcaa |
| 3160 | *dim-9* sequencing - FP | 5’ acaagcctggtaacctcgt |
| 3161 | *dim-9* sequencing - FP | 5’ tttaccccatctcccgtttct |
| 3162 | *dim-9* sequencing - FP | 5’ aggtcggctgttgtattcgg |
| 4695 | *dim-9* re-sequencing - RP | 5’ TATTTCAGTTGATAGTATGC |
| 4696 | *dim-9* re-sequencing - RP | 5’ TGTCAAATAAGATCGTCCCC |
| 4697 | *dim-9* re-sequencing - RP | 5’ ATCTAGTGTTTGAATAGGGC |
| 4698 | *dim-9* re-sequencing - RP | 5’ GATGATCAGGATATGCCCGC |
| 4699 | *dim-9* re-sequencing - RP | 5’ ACTTCGATAATTCTGTGCCG |
| 4700 | *dim-9* re-sequencing - RP | 5’ AGGAGAACTATGGGTAAGGC |
| 4311 | *cul4* amplification - FP | 5’ GATCGAGCGGCCGCCGTACAGTGGTGCGGATAGG |
| 4312 | *cul4* amplification - RP | 5’ GATCGAGAATTCGCATTGAACGGGCTGAAGGG |
| 2210 | *cul4* sequencing - FP | 5’ TCCGGGCCCAGCGCTGACATAGCGATG |
| 2283 | *cul4* sequencing - FP | 5’ GAAGATCTATGTCCGCCAAACTCAAG |
| 2285 | *cul4* sequencing - FP | 5’ GAAGATCTATGGAGAAACTATACCGC |
| 4344 | *cul4* sequencing - FP | 5’ GCTGGATGCAAACGACCTCG |
| 4345 | *cul4* sequencing - FP | 5’ TACCTACCCCGATGTTCGCG |
| 2012 | *dim-2* amplification and sequencing - FP | 5’ GCTGGAGCTCCACCGCGGTGGCGGCCGCTTGCTCCTCCTTTTTACCACG |
| 1990 | *dim-2* amplification - RP | 5’ ACCGCGGTGGCGGCCGCTCTAGAACTAGTACAAGACCGGCAACCATCTG |
| 1517 | *dim-2* sequencing - FP | 5’ GCTCTAGATCGTTATCAGCCAAGCCATG |
| 3813 | *dim-2* sequencing - FP | 5’ TAGGATCCGATCTGGGTTCGATCCAAGC |
| 1029 | *dim-2* sequencing - FP | 5' ACCGAGCACCCAACCACT |
| 1078 | *dim-2* sequencing - FP | 5’ AgCTggTCTATACCgAAgAT |
| 1988 | *dim-2* sequencing - FP | 5’ GAGGTCGACGGTATCGATAAGCTTGATATATCAAGGCCTGGAACAACGG |
| 1106 | *dim-2* sequencing - FP | 5’ AGGTCATCCAGACAAGCATCC |
| 3085 | *hda-1* amplification and sequencing - FP | 5’ AAGGAAAAAAGCGGCCGCTTCACTCCTGAGACGC |
| 2079 | *hda-1* amplification - RP | 5’ ACCGCGGTGGCGGCCGCTCTAGAACTAGTGGTTCCGGCAAGGATAGAGG |
| 3132 | *hda-1* sequencing - FP | 5’ CGGAATTCGACTTTGGTCCAAATCCCCA |
| 3009 | *hda-1* sequencing - FP | 5’ GGAATTCGGCGAACCACCCCCAAAGATG |
| 3083 | *hda-1* sequencing - FP | 5’ CGGAATTCGAGGACACGGAGTCATTGGC |
| 3084 | *hda-1* sequencing - RP | 5’ CCGGGATCCTACTCCTGGATCTGTGCTTGTTG |
| 4686 | *hda-1* re-sequencing - RP | 5’ AGCTGATCTTAAAACTCGCC |
| 4687 | *hda-1* re-sequencing - RP | 5’ GCCTGGTCGCATGCATTCCC |
| 4688 | *hda-1* re-sequencing - RP | 5’ GCATGATGGCCTGGCGGACGG |
| 1321 | *cdp-2* amplification - FP | 5’ GCGGCCGCGATCGAAGTGCGTAATTTGGTGGG |
| 3145 | *cdp-2* amplification - RP | 5’ TAGACATAGTACGCCCGTCG |
| 3064 | *cdp-2* sequencing - FP | 5’ CCCGGATCCGAGATCCCCAGGTTTGAT |
| 3065 | *cdp-2* sequencing - RP | 5’ AGCCGTCGACTACAGAGGATCAGTGGAATCG |
| 3153 | *cdp-2* sequencing - FP | 5’ GCCGGCTCCCGTCGAAAAGACGAGCAACCG |
| 4684 | *cdp-2* re-*s*equencing - RP | 5’ TTCAAGCATACTTCTCCAGC |
| 3066 | *cdp-2* re-*s*equencing - RP | 5’ AGCCGTCGACTAATCAGTGGGCTCTTCAATG |
| 4685 | *cdp-2* re-*s*equencing - FP | 5’ CTCACGCGACAAGTCTCGCC |
| 2090 | *chap* amplification - FP | 5’ AAGGAAAAAAGCGGCCGCCGCCCAGGAAGATACAAGG |
| 2083 | *chap* amplification - RP | 5’ ACCGCGGTGGCGGCCGCTCTAGAACTAGTCTCCGGAATTGACATCATGG |
| 4657 | *chap s*equencing - FP | 5' GATTCACTCTGTTGGATGACG |
| 3070 | *chap s*equencing - FP | 5’ CGGAATTCAAGAAGCCCCATGAGTTGC |
| 4682 | *chap* re-*s*equencing - RP | 5’ ACAAACAATATGCCCCTACC |
| 4683 | *chap* re-*s*equencing - RP | 5' GTTGTGCAGCTCGGCCGGGC |
| 1417 | *hpo* amplification - FP | 5’ gccgcggccgcctttatccgagagccctgatattc |
| 1960 | *hpo* amplification - RP | 5’ GACTAGTCAACTTTTCATTTCCAGC |
| 4539 | *hpo s*equencing - FP | 5’ ACTGCAACGCCCCCCGTTCC |
| 1511 | *hpo s*equencing - FP | 5’ CGGGATCCTCCGGCACTCCCCAAGCAAG |
| 5820 | *hH3* amplification and cloning - FP | 5’ GATCGAGGATCCTCTTGAGTGTTCCAGTTGGTCC |
| 5821 | *hH3* amplification and cloning - RP | 5’ gatcgagaattcaacatgaatgcaacttgaacgcg |
| 5804 | *hH3 s*equencing - FP | 5’ TCTAGTCATCAACCAGTCTCGACC |
| 5805 | *hH3 s*equencing - RP | 5’ ATGTAGTGCGAAGTGTGACGCG |
| 4869 | NCU06484 (*dim-1* amplify) | 5’ GATCGATCTAGAACCTACCTACAATTCACGGC |
| 4870 | NCU06484 (*dim-1* amplify, stitch 2R) | 5’ GATCGAACTAGTATACAATCGATGGTATACCG |
| 4871 | NCU06484 (*dim-1* sequence #1) | 5’ ACCCCAGTCCTATTCAGAGC |
| 4872 | NCU06484 (*dim-1* sequence #2) | 5’ TGACGACGAATTCAAGGTCG |
| 4873 | NCU06484 (*dim-1* sequence #3) | 5’ ACCTATGGTCCCTTCGGTGGC |
| 4874 | NCU06484 (*dim-1* sequence #4) | 5’ GTTCAAAGACCAGTTGGCCG |
| 4875 | NCU06484 (*dim-1* sequence #5) | 5’ ATCCAGAACCTGTGGAAGGC |
| 4876 | NCU06484 (*dim-1* sequence #6) | 5’ GGAAGAAGAAAGCACTCTGC |
| 4877 | NCU06484 (*dim-1* sequence #7) | 5’ TCGTGGACCGCACGGCCGGC |
| 5849 | NCU04423 C-terminal FP1 (stitch PCR) | 5’ ATTACGACAGTGACAGTGGCC |
| 5850 | NCU04423 C-term tagging RP2 (stitch PCR) | 5’ CCTCCGCCTCCGCCTCCGCCGCCTCCGCCTGCGTTTCTCGTCGCTAGCGTC |
| 5851 | NCU04423 C-term tagging FP3 (stitch PCR) | 5’ gagctcggtaccaagcttgatgcatagcgagagttctaagtactctacttggc |
| 5852 | NCU04423 downstream RP4 (stitch PCR) | 5’ tccatttctccattcttcgcgg |
| 5858 | NCU04423 mutation check (SmlI digest) FP | 5’ aacttgaggaaagctgggacg |
| 5859 | NCU04423 mutation check (SmlI digest) RP | 5’ AGGGTGGAAGCAAGTTCGAGC |
| 5860 | NCU04423 cassette integration check FP | 5’ GATCACAGCCTCTGCTCGATCC |