WT GCTTTTAATCTGTGGTGTTGGAGAAGTCTCTTGAGAGTCCCTTGGACTGCAAGGAGATCCAACCAGTCCA
BFF1 GCTTTTAATCTGTGGTGTTGGAGAAGTCTCTTGAGAGTCCCTTGGACTGCAAGGAGATCCAACCAGTCCA
BFF2 GCTTTTAATCTGTGGTGTTGGAGAAGTCTCTTGAGAGTCCCTTGGACTGCAAGGAGATCCAACCAGTCCA
BFF3 GCTTTTAATCTGTGGTGTTGGAGAAGTCTCTTGAGAGTCCCTTGGACTGCAAGGAGATCCAACCAGTCCA

Long range primer F

TCCTAAAGGAGATCAGTCCTGAATATTCATTGGAAGGACTGATGCTGAAGCGGAAACTCCAATACTTTGG
TCCTAAAGGAGATCAGTCCTGAATATTCATTGGAAGGACTGATGCTGAAGCGGAAACTCCAATACTTTGG
TCCTAAAGGAGATCAGTCCTGAATATTCATTGGAAGGACTGATGCTGAAGCGGAAACTCCAATACTTTGG
TCCTAAAGGAGATCAGTCCTGAATATTCATTGGAAGGACTGATGCTGAAGCGGAAACTCCAATACTTTGG

CCACCTGATGGGAAGAGCTGACTCATTTGAAAAGACCCTGATGCTGGGAAAGATTGAAGGCAGGAGGAGA
CCACCTGATGGGAAGAGCTGACTCATTTGAAAAGACCCTGATGCTGGGAAAGATTGAAGGCAGGAGGAGA
CCACCTGATGGGAAGAGCTGACTCATTTGAAAAGACCCTGATGCTGGGAAAGATTGAAGGCAGGAGGAGA
CCACCTGATGGGAAGAGCTGACTCATTTGAAAAGACCCTGATGCTGGGAAAGATTGAAGGCAGGAGGAGA

AGGGGACGACAGAGGATGAGATGGTTGGATGGCATCACTGTCTCGATGGACATGAGTTTTAGTAAGCTCC
AGGGGACGACAGAGGATGAGATGGTTGGATGGCATCACTGTCTCGATGGACATGAGTTTTAGTAAGCTCC
AGGGGACGACAGAGGATGAGATGGTTGGATGGCATCACTGTCTCGATGGACATGAGTTTTAGTAAGCTCC
AGGGGACGACAGAGGATGAGATGGTTGGATGGCATCACTGTCTCGATGGACATGAGTTTTAGTAAGCTCC

5' junction primer F

GGGAGTTGATGGTGGACAGGGAAGTCTGGCTGTAGTCCAGGGGGTCGCAAAGAGTTGGACACGACTGAGC
GGGAGTTGATGGTGGACAGGGAAGTCTGGCTGTAGTCCAGGGGGTCGCAAAGAGTTGGACACGACTGAGC
GGGAGTTGATGGTGGACAGGGAAGTCTGGCTGTAGTCCAGGGGGTCGCAAAGAGTTGGACACGACTGAGC
GGGAGTTGATGGTGGACAGGGAAGTCTGGCTGTAGTCCAGGGGGTCGCAAAGAGTTGGACACGACTGAGC

Left homology arm (542 bp)

GTCTGAACTGAACTGAGCTGTGGGCTCCCTGTTGTGAATTCTATTGGAAATGATGAGCCTTAGGCTGGAG
GTCTGAACTGAACTGAGCTGTGGGCTCCCTGTTGTGAATTCTATTGGAAATGATGAGCCTTAGGCTGGAG
GTCTGAACTGAACTGAGCTGTGGGCTCCCTGTTGTGAATTCTATTGGAAATGATGAGCCTTAGGCTGGAG
GTCTGAACTGAACTGAGCTGTGGGCTCCCTGTTGTGAATTCTATTGGAAATGATGAGCCTTAGGCTGGAG

AAGACTCTTGAGAGTCCCATGGACTGCAAGGAGATCCAACCAGTCCATTCTAAAGGAGATCAGTCCTGGG
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AAGACTCTTGAGAGTCCCATGGACTGCAAGGAGATCCAACCAGTCCATTCTAAAGGAGATCAGTCCTGGG
AAGACTCTTGAGAGTCCCATGGACTGCAAGGAGATCCAACCAGTCCATTCTAAAGGAGATCAGTCCTGGG

TGTTCTTTGGAAGGAATGATGCTAAAGCTGAAACTCCAGTACTTTGGCCACCTCATGCGAAGAGTTGACT
TGTTCTTTGGAAGGAATGATGCTAAAGCTGAAACTCCAGTACTTTGGCCACCTCATGCGAAGAGTTGACT
TGTTCTTTGGAAGGAATGATGCTAAAGCTGAAACTCCAGTACTTTGGCCACCTCATGCGAAGAGTTGACT
TGTTCTTTGGAAGGAATGATGCTAAAGCTGAAACTCCAGTACTTTGGCCACCTCATGCGAAGAGTTGACT


WT CATTGGAAAAGACTCTGATGCTGGGAGGGATTGGGGGCAGGAGGAGAAGGGGACGACAGAGGATGAGATG
BFF1 CATTGGAAAAGACTCTGATGCTGGGAGGGATTGGGGGCAGGAGGAGAAGGGGACGACAGAGGATGAGATG
BFF2 CATTGGAAAAGACTCTGATGCTGGGAGGGATTGGGGGCAGGAGGAGAAGGGGACGACAGAGGATGAGATG
BFF3 CATTGGAAAAGACTCTGATGCTGGGAGGGATTGGGGGCAGGAGGAGAAGGGGACGACAGAGGATGAGATG
GCTGGATGGCATCACTGACTCAATGGACGTGAGTCTGAGTGAACTCCGGGAGTTGGTGATGGACAGGGAG
GCTGGATGGCATCACTGACTCAATGGACGTGAGTCTGAGTGAACTCCGGGAGTTGGTGATGGACAGGGAG
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GCTGGATGGCATCACTGACTCAATGGACGTGAGTCTGAGTGAACTCCGGGAGTTGGTGATGGACAGGGAG
GCCTGGCGTGCTACAATTCATGGGGTCGCAAAGAGTCAGACACGACTGAACGACTGAACTGAACTGAACT
GCCTGGCGTGCTACAATTCATGGGGTCGCAAAGAGTCAGACACGACTGAACGACTGAACTGAACTGAACT
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GCCTGGCGTGCTACAATTCATGGGGTCGCAAAGAGTCAGACACGACTGAACGACTGAACTGAACTGAACT
Left homology arm (542 bp)
GAACTGAAGGCTCAGGGGTTACCTTCCGCCTCTGTAGGTACAGAAGCCATTCACAGACCCTGAGAAGTCA
GAACTGAAGGCTCAGGGGTTACCTTCCGCCTCTGTAGGTACAGAAGCCATTCACAGACCCTGAGAAGTCA
GAACTGAAGGCTCAGGGGTTACCTTCCGCCTCTGTAGGTACAGAAGCCATTCACAGACCCTGAGAAGTCA
GAACTGAAGGCTCAGGGGTTACCTTCCGCCTCTGTAGGTACAGAAGCCATTCACAGACCCTGAGAAGTCA
5’ Genome walking SP3
XhoI
GAACCCTTTTCTTAACATTCCATCTCTAGAGCAAGCGCTTTTCCCCAGGGTGAGGGATTATGCACGTGAG
GAACCCTTTTCTTAACATTCCATCTCTAGAGCAAGCGCTTTTCCCCAGGGTGAGGGATTATGCACCTCGA
GAACCCTTTTCTTAACATTCCATCTCTAGAGCAAGCGCTTTTCCCCAGGGTGAGGGATTATGCACCTCGA
GAACCCTTTTCTTAACATTCCATCTCTAGAGCAAGCGCTTTTCCCCAGGGTGAGGGATTATGCACCTCGA
LoxP
TALEN-L
TALEN-R
AGACTGACCCTTAGGTTCCTCACGAATCCTTATGGAACACACATACCATCCAACTTTCGCGTCTGCTCTT
GATAACTTCGTATAATGTATGCTATACGAAGTTATAGTCGAGGGCCCCTGCAGGTCAATTCTACCGGGTA
GATAACTTCGTATAATGTATGCTATACGAAGTTATAGTCGAGGGCCCCTGCAGGTCAATTCTACCGGGTA
GATAACTTCGTATAATGTATGCTATACGAAGTTATAGTCGAGGGCCCCTGCAGGTCAATTCTACCGGGTA
pGK-NEO-pT cassette (1803 bp)
CAGT----------
GGGGAGGCGCTTTTCCCAAGGCAGTCTGGAGCATGCGCTTTAGCAGCCCCGCTGGCACTTGGCGCTACAC
GGGGAGGCGCTTTTCCCAAGGCAGTCTGGAGCATGCGCTTTAGCAGCCCCGCTGGCACTTGGCGCTACAC
GGGGAGGCGCTTTTCCCAAGGCAGTCTGGAGCATGCGCTTTAGCAGCCCCGCTGGCACTTGGCGCTACAC
5’ Genome walking SP2

AAGTGGCCTCTGGCCTCGCACACATTCCACATCCACCGGTAGCGCCAACCGGCTCCGTTCTTTGGTGGCC
AAGTGGCCTCTGGCCTCGCACACATTCCACATCCACCGGTAGCGCCAACCGGCTCCGTTCTTTGGTGGCC
AAGTGGCCTCTGGCCTCGCACACATTCCACATCCACCGGTAGCGCCAACCGGCTCCGTTCTTTGGTGGCC


WT
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BFF2 CCTTCGCGCCACCTTCTACTCCTCCCCTAGTCAGGAAGTTCCCCCCCGCCCCGCAGCTCGCGTCGTGCAG
BFF3 CCTTCGCGCCACCTTCTACTCCTCCCCTAGTCAGGAAGTTCCCCCCCGCCCCGCAGCTCGCGTCGTGCAG
GACGTGACAAATGGAAGTAGCACGTCTCACTAGTCTCGTGCAGATGGACAGCACCGCTGAGCAATGGAAG
GACGTGACAAATGGAAGTAGCACGTCTCACTAGTCTCGTGCAGATGGACAGCACCGCTGAGCAATGGAAG
GACGTGACAAATGGAAGTAGCACGTCTCACTAGTCTCGTGCAGATGGACAGCACCGCTGAGCAATGGAAG
5’ Genome walking SP1
CGGGTAGGCCTTTGGGGCAGCGGCCAATAGCAGCTTTGCTCCTTCGCTTTCTGGGCTCAGAGGCTGGGAA
CGGGTAGGCCTTTGGGGCAGCGGCCAATAGCAGCTTTGCTCCTTCGCTTTCTGGGCTCAGAGGCTGGGAA
CGGGTAGGCCTTTGGGGCAGCGGCCAATAGCAGCTTTGCTCCTTCGCTTTCTGGGCTCAGAGGCTGGGAA
GGGGTGGGTCCGGGGGCGGGCTCAGGGGCGGGCTCAGGGGCGGGGCGGGCGCGAAGGTCCTCCCGAGGCC
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GGGGTGGGTCCGGGGGCGGGCTCAGGGGCGGGCTCAGGGGCGGGGCGGGCGCGAAGGTCCTCCCGAGGCC
pGK-NEO-pT cassette (1803 bp)
CGGCATTCTCGCACGCTTCAAAAGCGCACGTCTGCCGCGCTGTTCTCCTCTTCCTCATCTCCGGGCCTTT
CGGCATTCTCGCACGCTTCAAAAGCGCACGTCTGCCGCGCTGTTCTCCTCTTCCTCATCTCCGGGCCTTT
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TGGAGAGGCTATTCGGCTATGACTGGGCACAACAGACAATCGGCTGCTCTGATGCCGCCGTGTTCCGGCT
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GTCAGCGCAGGGGCGCCCGGTTCTTTTTGTCAAGACCGACCTGTCCGGTGCCCTGAATGAACTGCAGGAC
GTCAGCGCAGGGGCGCCCGGTTCTTTTTGTCAAGACCGACCTGTCCGGTGCCCTGAATGAACTGCAGGAC
GTCAGCGCAGGGGCGCCCGGTTCTTTTTGTCAAGACCGACCTGTCCGGTGCCCTGAATGAACTGCAGGAC


WT
BFF1
BFF2
BFF3
GAGGCAGCGCGGCTATCGTGGCTGGCCACGACGGGCGTTCCTTGCGCAGCTGTGCTCGACGTTGTCACTG
5’ junction primer R
AAGCGGGAAGGGACTGGCTGCTATTGGGCGAAGTGCCGGGGCAGGATCTCCTGTCATCTCACCTTGCTCC
TGCCGAGAAAGTATCCATCATGGCTGATGCAATGCGGCGGCTGCATACGCTTGATCCGGCTACCTGCCCA
TTCGACCACCAAGCGAAACATCGCATCGAGCGAGCACGTACTCGGATGGAAGCCGGTCTTGTCGATCAGG
pGK-NEO-pT cassette (1803 bp)
ATGATCTGGACGAAGAGCATCAGGGGCTCGCGCCAGCCGAACTGTTCGCCAGGCTCAAGGCGCGCATGCC
CGACGGCGATGATCTCGTCGTGACCCATGGCGATGCCTGCTTGCCGAATATCATGGTGGAAAATGGCCGC
TTTTCTGGATTCATCGACTGTGGCCGGCTGGGTGTGGCGGACCGCTATCAGGACATAGCGTTGGCTACCC
GTGATATTGCTGAAGAGCTTGGCGGCGAATGGGCTGACCGCTTCCTCGTGCTTTACGGTATCGCCGCTCC


WT
BFF1 CGATTCGCAGCGCATCGCCTTCTATCGCCTTCTTGACGAGTTCTTCTGAGGGGATCGATCCGTCCTGTAA
BFF2 CGATTCGCAGCGCATCGCCTTCTATCGCCTTCTTGACGAGTTCTTCTGAGGGGATCGATCCGTCCTGTAA
BFF3 CGATTCGCAGCGCATCGCCTTCTATCGCCTTCTTGACGAGTTCTTCTGAGGGGATCGATCCGTCCTGTAA
GTCTGCAGAAATTGATGATCTATTAAACAATAAAGATGTCCACTAAAATGGAAGTTTTTCCTGTCATACT
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GTCTGCAGAAATTGATGATCTATTAAACAATAAAGATGTCCACTAAAATGGAAGTTTTTCCTGTCATACT
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TTGTTAAGAAGGGTGAGAACAGAGTACCTACATTTTGAATGGAAGGATTGGAGCTACGGGGGTGGGGGTG
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AGATCTATAGATCTCTCGTGGGATCATTGTTTTTCTCTTGATTCCCACTTTGTGGTTCTAAGTACTGTGG
pGK-NEO-pT cassette (1803 bp)
TTTCCAAATGTGTCAGTTTCATAGCCTGAAGAACGAGATCAGCAGCCTCTGTTCCACATACACTTCATTC
TTTCCAAATGTGTCAGTTTCATAGCCTGAAGAACGAGATCAGCAGCCTCTGTTCCACATACACTTCATTC
TTTCCAAATGTGTCAGTTTCATAGCCTGAAGAACGAGATCAGCAGCCTCTGTTCCACATACACTTCATTC
LoxP
TCAGTATTGTTTTGCCAAGTTCTAATTCCATCAGAAGCTATAACTTCGTATAATGTATGCTATACGAAGT
TCAGTATTGTTTTGCCAAGTTCTAATTCCATCAGAAGCTATAACTTCGTATAATGTATGCTATACGAAGT
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SalI
MSR1 promoter (972 bp)
WT
BFF1
BFF2
BFF3
TATGACTCTAGAGTCGACGGACCATCTCTTGATAGAAAGTAGGATCCCTCCCTCTTTGAGCACCATGAAG
TATGACTCTAGAGTCGACGGACCATCTCTTGATAGAAAGTAGGATCCCTCCCTCTTTGAGCACCATGAAG
TATGACTCTAGAGTCGACGGACCATCTCTTGATAGAAAGTAGGATCCCTCCCTCTTTGAGCACCATGAAG
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CAGGTATGGAAGATGAAAGTCATTCCTTTGTTCTGATCCCATGCCCGAGACCCCTTTCTTCTATTATACT
CAGGTATGGAAGATGAAAGTCATTCCTTTGTTCTGATCCCATGCCCGAGACCCCTTTCTTCTATTATACT
TCTCAGGAAATAAATAACTTTTTAGATGCTCAAAGGGATCTACAGAAATTGCTAACATCACTATAGACAG
TCTCAGGAAATAAATAACTTTTTAGATGCTCAAAGGGATCTACAGAAATTGCTAACATCACTATAGACAG
TCTCAGGAAATAAATAACTTTTTAGATGCTCAAAGGGATCTACAGAAATTGCTAACATCACTATAGACAG
MSR1 promoter (972 bp)
AGCTGAAGTGAGCAGTAAGGGATTGCTGCTTTTACTTGGTGGGTATCCTTTCCTACTCTGCTTTGTGTTT
AGCTGAAGTGAGCAGTAAGGGATTGCTGCTTTTACTTGGTGGGTATCCTTTCCTACTCTGCTTTGTGTTT
AGCTGAAGTGAGCAGTAAGGGATTGCTGCTTTTACTTGGTGGGTATCCTTTCCTACTCTGCTTTGTGTTT
GAAGCTAGAGATAAGGGATCTAGGGAAAAGGATTGAGAAAAACAAATCACTTAGACATAGAGTCTTCCCT
GAAGCTAGAGATAAGGGATCTAGGGAAAAGGATTGAGAAAAACAAATCACTTAGACATAGAGTCTTCCCT
GAAGCTAGAGATAAGGGATCTAGGGAAAAGGATTGAGAAAAACAAATCACTTAGACATAGAGTCTTCCCT
CAAGGTTATACAGTATGAAAGATCATGAGTATTAGTGGAAGATATTGAGATTAATGGAAGATTAATAGGA
CAAGGTTATACAGTATGAAAGATCATGAGTATTAGTGGAAGATATTGAGATTAATGGAAGATTAATAGGA
CAAGGTTATACAGTATGAAAGATCATGAGTATTAGTGGAAGATATTGAGATTAATGGAAGATTAATAGGA

WT ----------

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BFF2 ATGAGAATATTATAGAAAGCAGACCTATCTTACAAAAAGGAAAAGATTAATCTTCCATATGTTATGCACG

BFF3 ATGAGAATATTATAGAAAGCAGACCTATCTTACAAAAAGGAAAAGATTAATCTTCCATATGTTATGCACG

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MSR1 promoter (972 bp)

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EcoRI SP110 coding sequence (1338 bp)

GTGTGTCTACGAATTCGCCACCATGTTCACTCTGACCAAAGCCTTGGAAAAGGCTCTTCTCCAGCATTTC

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GTGTGTCTACGAATTCGCCACCATGTTCACTCTGACCAAAGCCTTGGAAAAGGCTCTTCTCCAGCATTTC

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ATATACATGAAGGTGAACATCGCCTATGCCATCAACAAGCCATTCCCCTTCTTCGAAGCGCTCCGGGACA


WT
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BFF2 ATTCCTTCATCACTGAGAGAATGTACAAGGAATCTCTGGAAGCCTGTCAAAATCTGGTCCCTCTGTCCAA
BFF3 ATTCCTTCATCACTGAGAGAATGTACAAGGAATCTCTGGAAGCCTGTCAAAATCTGGTCCCTCTGTCCAA
AGTGGTGCACAATATTCTCACCAGTCTGGAGCAGACTTTCCACCCGTCAGTGCTGCTGACGTTGTTCAGC
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SP110 coding sequence (1338 bp)
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ACGAAGAGAAAAACAGACCCCCACTGACCCTGCTTGAAGACCTGGCCAACCCAGCAGAAGGGTGCTCCCT
ACGAAGAGAAAAACAGACCCCCACTGACCCTGCTTGAAGACCTGGCCAACCCAGCAGAAGGGTGCTCCCT
3’ Genome walking SP1
TCAGACACTGCTGCCACCACCCCGACCCCAGATATCGCTGCCAAGTCATCTGTCCTCAGCACCGAGAGTC
TCAGACACTGCTGCCACCACCCCGACCCCAGATATCGCTGCCAAGTCATCTGTCCTCAGCACCGAGAGTC
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TGTGACCCCAGAGCAACCGCACAGCCAATCATTGAGATCCTGGATGAGCAGCCCAGTCCTTCTCCCCGAG
3’ junction primer F
CTGTGCCTCTCCTTGGCTGCATTCAGGAAGGAAAAACCACTCCAGTGTCCTCCAGAGATCACCAGAGAAA
CTGTGCCTCTCCTTGGCTGCATTCAGGAAGGAAAAACCACTCCAGTGTCCTCCAGAGATCACCAGAGAAA
CTGTGCCTCTCCTTGGCTGCATTCAGGAAGGAAAAACCACTCCAGTGTCCTCCAGAGATCACCAGAGAAA
3’ Genome walking SP2
AGATAAGGAAGACTCTCGAGAGATGCCCCACAGTCCCTCAGGACCCGAGTCAGTGGTAAAAGATGACTCT
AGATAAGGAAGACTCTCGAGAGATGCCCCACAGTCCCTCAGGACCCGAGTCAGTGGTAAAAGATGACTCT
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WT
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BFF2 CCAGCAGCAAATGACCTGGAAATGGCCAGGGAAGTACCCTGCACACCTGCAAACAAGAAAGCAAGAAGAA
BFF3 CCAGCAGCAAATGACCTGGAAATGGCCAGGGAAGTACCCTGCACACCTGCAAACAAGAAAGCAAGAAGAA
3’ Genome walking SP3
AAAAACGTCCGAACTGGTCAAATTCCAAAAGAAGACGGCAGAAAAAAAAAGCCCCGTCAAGATGAGATGAT
AAAAACGTCCGAACTGGTCAAATTCCAAAAGAAGACGGCAGAAAAAAAAAGCCCCGTCAAGATGAGATGAT
AAAAACGTCCGAACTGGTCAAATTCCAAAAGAAGACGGCAGAAAAAAAAAGCCCCGTCAAGATGAGATGAT
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SP110 coding sequence (1338 bp)
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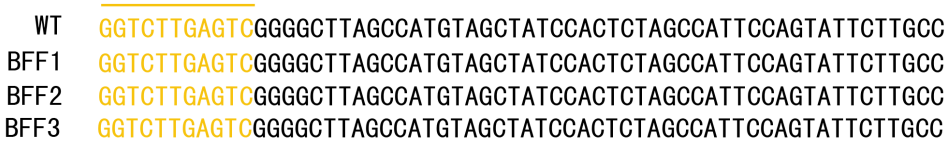
SP110 coding sequence (1338 bp)
WT
BFF1
BFF2
BFF3
BamHI
poly A (264 bp)
Right homology arm (505 bp)


WT
BFF1
BFF2
BFF3
CTGACCTTTCATTGTGTGCACCAGCCTGGGTTTCCCTCCCGCCTTGGGCCCCTCTGTTCCTCTCATGTGT
GTCTCCCAATCCAGCCAACTCTCCTCGGTTCTCTGGGGCTGTGGAGCAACGCTCTGCTGGCCACTCGGTT
TCCTCTACACCCATGGTGTGGCTTGCATCCTTGTGGGACTCTGTTCCCTTCCCTGGTTCGTGTTTATCCG
Right homology arm (505 bp)
AGACACTTATCCTCAGCCTGCTCTTACGCACTTCTTGGGTGCAGGCTCTTTCTCCTCCTCCCTATTGGTC
TTTGGGCCAACTGGGATCTCATGAAGAATCTTTGTTTGTCCCATGGATGTCTGTAGAGCTGTGGGCATAC
3’ junction primer R
AGAGCCATGGCAGAGGGCACAGCCCCAGGACAGGACTGCTGGTTGCCGAGACAAGGCTTTTTTATGGAAG
CAGACATAGCTGGTGGCCAGTAGCCCTGCAGGGGTCACCTGCCATAGTTGAATTCCTGAAGGCCCTGCTT
Long range primer R
CTCTGAATGTCCCTGCAGACCTGGCTCCTGGTCTTGGGCATGTGGGGGCCATGGCCAGTGTGTGCCCTCT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BFF1 GGTCTTGAGTCGGGGCTTAGCCATGTAGCTATCCACTCTAGCCATTCCAGTATTCTTGCC
BFF2 GGTCTTGAGTCGGGGCTTAGCCATGTAGCTATCCACTCTAGCCATTCCAGTATTCTTGCC
BFF3 GGTCTTGAGTCGGGGCTTAGCCATGTAGCTATCCACTCTAGCCATTCCAGTATTCTTGCC