Appendix I: Primers Used for Sequencing

For sequencing ethanol cassette (pMota, pMota2):

5’ – CATCTCCATTgTCCCTgAAAATCAgTT – 3’
5’ – ATgAgTTATACTgTCggTACCTATT – 3’
5’ – AATAggTACCgACAgTATAACTCAT – 3’
5’ – AAAAgACgATgAAAgAAgCCgATgC – 3’
5’ – gCATCggCTTCTTTCATCgTCTTTT – 3’
5’ – ATggAAgTgTTCAACggTAACg – 3’
5’ – CgTTACCgTTgAACACTTCCAT – 3’
5’ – ATTTgAAgCTTATTCTTCAACg – 3’
5’ – CgTTgAAgAATAAgCTTCAAAT – 3’
5’ – gATTATTCAgTTggCATTACACCA – 3’

For sequencing omrA gene (pMota2-omrA):

5’ – ATgTCAgAAAgAACgCTTAgTATgCgT – 3’
5’ – TTTTgAAAATAATCAATTTATCCCAAA – 3’
5’ – TCAAATTCAAAATTTgTTTAAATTCg – 3’
5’ – CgAATTTAAACAAATTTTgAATTT – 3’
5’ – CAATATTgAAAATATTTCACTCAACT – 3’
5’ – TATCCAATTTTTTTggCATgTTgT – 3’
5’ – TACTTTATCgAACATggTgAAgTgA – 3’
5’ – ATATTATgCggCCgCCTATTATTCTAATTTTgTTAgTTTTTgTgTTTTTT – 3’

Appendix II: Plasmid Sequences

pMota:

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1  TCTTCCGCTTCCTCGCTCACTGACTCGCTGCGCTCGGTCGTTCGGCTGCGGCGAGCGGTA
   61  TCAGCTCACTCAAAGGCGGTAATACGGTTATCCACAGAATCAGGGGATAACGCAGGAAAG
  121  AACATGTGAGCAAAAGGCCAGCAAAAGGCCAGGAACCGTAAAAAGGCCGCGTTGCTGGCG
  181  TTTTTCCATAGGCTCCGCCCCCCTGACGAGCATCACAAAAATCGACGCTCAAGTCAGAGG
  241  TGGCGAAACCCGACAGGACTATAAAGATACCAGGCGTTTCCCCCTGGAAGCTCCCTCGTG
  301  CGCTCTCCTGTTCCGACCCTGCCGCTTACCGGATACCTGTCCGCCTTTCTCCCTTCGGGA
  361  AGCGTGGCGCTTTCTCATAGCTCACGCTGTAGGTATCTCAGTTCGGTGTAGGTCGTTCGC
  421  TCCAAGCTGGGCTGTGTGCACGAACCCCCCGTTCAGCCCGACCGCTGCGCCTTATCCGGT
  481  AACTATCGTCTTGAGTCCAACCCGGTAAGACACGACTTATCGCCACTGGCAGCAGCCACT
  541  GGTAACAGGATTAGCAGAGCGAGGTATGTAGGCGGTGCTACAGAGTTCTTGAAGTGGTGG
  601  CCTAACTACGGCTACACTAGAAGAACAGTATTTGGTATCTGCGCTCTGCTGAAGCCAGTT
  661  ACCTTCGGAAAAAGAGTTGGTAGCTCTTGATCCGGCAAACAAACCACCGCTGGTAGCGGT
  721  GGTTTTTTTGTTTGCAAGCAGCAGATTACGCGCAGAAAAAAAGGATCTCAAGAAGATCCT
  781  TTGATCTTTTCTACGGGGTCTGACGCTCAGTGGAACGAAAACTCACGTTAAGGGATTTTG
  841  GTCATGAGATTATCAAAAAGGATCTTCACCTAGATCCTTTTAAATTAAAAATGAAGTTTT
  901  AAATCAATCTAAAGTATATATGAGTAAACTTGGTCTGACAGTTACCAATGCTTAATCAGT
  961  GAGGCACCTATCTCAGCGATCTGTCTATTTCGTTCATCCATAGTTGCCTGACTCCCCGTC
 1021  GTGTAGATAACTACGATACGGGAGGGCTTACCATCTGGCCCCAGTGCTGCAATGATACCG
 1081  CGAGACCCACGCTCACCGGCTCCAGATTTATCAGCAATAAACCAGCCAGCCGGAAGGGCC
 1141  GAGCGCAGAAGTGGTCCTGCAACTTTATCCGCCTCCATCCAGTCTATTAATTGTTGCCGG
 1201  GAAGCTAGAGTAAGTAGTTCGCCAGTTAATAGTTTGCGCAACGTTGTTGCCATTGCTACA
 1261  GGCATCGTGGTGTCACGCTCGTCGTTTGGTATGGCTTCATTCAGCTCCGGTTCCCAACGA
 1321  TCAAGGCGAGTTACATGATCCCCCATGTTGTGCAAAAAAGCGGTTAGCTCCTTCGGTCCT
 1381  CCGATCGTTGTCAGAAGTAAGTTGGCCGCAGTGTTATCACTCATGGTTATGGCAGCACTG
 1441  CATAATTCTCTTACTGTCATGCCATCCGTAAGATGCTTTTCTGTGACTGGTGAGTACTCA
 1501  ACCAAGTCATTCTGAGAATAGTGTATGCGGCGACCGAGTTGCTCTTGCCCGGCGTCAATA
 1561  CGGGATAATACCGCGCCACATAGCAGAACTTTAAAAGTGCTCATCATTGGAAAACGTTCT
 1621  TCGGGGCGAAAACTCTCAAGGATCTTACCGCTGTTGAGATCCAGTTCGATGTAACCCACT
 1681  CGTGCACCCAACTGATCTTCAGCATCTTTTACTTTCACCAGCGTTTCTGGGTGAGCAAAA
 1741  ACAGGAAGGCAAAATGCCGCAAAAAAGGGAATAAGGGCGACACGGAAATGTTGAATACTC
 1801  ATACTCTTCCTTTTTCAATATTATTGAAGCATTTATCAGGGTTATTGTCTCATGAGCGGA
 1861  TACATATTTGAATGTATTTAGAAAAATAAACAAATAGGGGTTCCGCGCACATTTCCCCGA
 1921  AAAGTGCCACCTGACGTCTAAGAAACCATTATTATCATGACATTAACCTATAAAAATAGG
 1981  CGTATCACGAGGCCCTTTCGTCTCGCGCGTTTCGGTGATGACGGTGAAAACCTCTGACAC
 2041  ATGCAGCTCCCGGAGACGGTCACAGCTTGTCTGTAAGCGGATGCCGGGAGCAGACAAGCC
 2101  CGTCAGGGCGCGTCAGCGGGTGTTGGCGGGTGTCGGGGCTGGCTTAACTATGCGGCATCA
 2161  GAGCAGATTGTACTGAGAGTGCACCATAAAATTGTAAACGTTAATATTTTGTTAAAATTC
 2221  GCGTTAAATTTTTGTTAAATCAGCTCATTTTTTAACCAATAGGCCGAAATCGGCAAAATC
 2281  CCTTATAAATCAAAAGAATAGCCCGAGATAGGGTTGAGTGTTGTTCCAGTTTGGAACAAG
 2341  AGTCCACTATTAAAGAACGTGGACTCCAACGTCAAAGGGCGAAAAACCGTCTATCAGGGC
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2401 GATGGCCCACTACGTGAACCATCACCCAAATCAAGTTTTTTGGGGTCGAGGTGCCGTAAA
2461 GCACTAAATCGGAACCCTAAAGGGAGCCCCCGATTTAGAGCTTGACGGGGAAAGCCGGCG
2521 AACGTGGCGAGAAAGGAAGGGAAGAAAGCGAAAGGAGCGGGCGCTAGGGCGCTGGCAAGT
2581 GTAGCGGTCACGCTGCGCGTAACCACCACACCCGCCGCGCTTAATGCGCCGCTACAGGGC
2641 GCGTACTATGGTTGCTTTGACGTATGCGGTGTGAAATACCGCACAGATGCGTAAGGAGAA
2701 AATACCGCATCAGGCGCCATTCGCCATTCAGGCTGCGCAACTGTTGGGAAGGGCGATCGG
2761 TGCGGGCCTCTTCGCTATTACGCCAGCTGGCGAAAGGGGGATGTGCTGCAAGGCGATTAA
2821 GTTGGGTAACGCCAGGGTTTTCCCAGTCACGACGTTGTAAAACGACGGCCAGTGCCAAGC
2881 TTAAGGTGCACGGCCCACGTGGCCACTAGTACTTCTCGAGCTCTGTACATGTCCGCGGTC
2941 GCGACGTACGCGTATCGATGGCGCCAG

>500 base pair homologous upstream region, containing the psbAII promoter

CTGCAGAGCGTTCCAGTGGATATTTGCTGGGGG
3001 TTAATGAAACATTGTGGCGGAACCCAGGGACAATGTGACCAAAAAATTCAGGGATATCAA
3061 TAAGTATTAGGTATATGGATCATAATTGTATGCCCGACTATTGCTTAAACTGACTGACCA
3121 CTGACCTTAAGAGTAATGGCGTGCAAGGCCCAGTGATCAATTTCATTATTTTTCATTATT
3181 TCATCTCCATTGTCCCTGAAAATCAGTTGTGTCGCCCCTCTACACAGCCCAGAACTATGG
3241 TAAAGGCGCACGAAAAACCGCCAGGTAAACTCTTCTCAACCCCCAAAACGCCCTCTGTTT
3301 ACCCATGGAAAAAACGACAATTACAAGAAAGTAAAACTTATGTCATCTATAAGCTTCGTG
3361 TATATTAACTTCCTGTTACAAAGCTTTACAAAACTCTCATTAATCCTTTAGACTAAGTTT
3421 AGTCAGTTCCAATCTGAACATCGACAAATACATAAGGAATTATAACCAT

>Start of the pdc/adh genetic cassette, the pdc gene, note the CATATG NdeI >restriction site that allows for cloning genes into the promoter structure with ease

ATGAGTTATAC
3481 TGTCGGTACCTATTTAGCGGAGCGGCTTGTCCAGATTGGTCTCAAGCATCACTTCGCAGT
3541 CGCGGGCGACTACAACCTCGTCCTTCTTGACAACCTGCTTTTGAACAAAAACATGGAGCA
3601 GGTTTATTGCTGTAACGAACTGAACTGCGGTTTCAGTGCAGAAGGTTATGCTCGTGCCAA
3661 AGGCGCAGCAGCAGCCGTCGTTACCTACAGCGTCGGTGCGCTTTCCGCATTTGATGCTAT
3721 CGGTGGCGCCTATGCAGAAAACCTTCCGGTTATCCTGATCTCCGGTGCTCCGAACAACAA
3781 TGATCACGCTGCTGGTCACGTGTTGCATCACGCTCTTGGCAAAACCGACTATCACTATCA
3841 GTTGGAAATGGCCAAGAACATCACGGCCGCAGCTGAAGCGATTTACACCCCAGAAGAAGC
3901 TCCGGCTAAAATCGATCACGTGATTAAAACTGCTCTTCGTGAGAAGAAGCCGGTTTATCT
3961 CGAAATCGCTTGCAACATTGCTTCCATGCCCTGCGCCGCTCCTGGACCGGCAAGCGCATT
4021 GTTCAATGACGAAGCCAGCGACGAAGCTTCTTTGAATGCAGCGGTTGAAGAAACCCTGAA
4081 ATTCATCGCCAACCGCGACAAAGTTGCCGTCCTCGTCGGCAGCAAGCTGCGCGCAGCTGG
4141 TGCTGAAGAAGCTGCTGTCAAATTTGCTGATGCTCTCGGTGGCGCAGTTGCTACCATGGC
4201 TGCTGCAAAAAGCTTCTTCCCAGAAGAAAACCCGCATTACATCGGTACCTCATGGGGTGA
4261 AGTCAGCTATCCGGGCGTTGAAAAGACGATGAAAGAAGCCGATGCGGTTATCGCTCTGGC
4321 TCCTGTCTTCAACGACTACTCCACCACTGGTTGGACGGATATTCCTGATCCTAAGAAACT

4381 GGTTCTCGCTGAACCGCGTTCTGTCGTCGTTAACGGCGTTCGCTTCCCCAGCGTTCATCT
4441 GAAAGACTATCTGACCCGTTTGGCTCAGAAAGTTTCCAAGAAAACCGGTGCTTTGGACTT
4501 CTTCAAATCCCTCAATGCAGGTGAACTGAAGAAAGCCGCTCCGGCTGATCCGAGTGCTCC
4561 GTTGGTCAACGCAGAAATCGCCCGTCAGGTCGAAGCTCTTCTGACCCCGAACACGACGGT
4621 TATTGCTGAAACCGGTGACTCTTGGTTCAATGCTCAGCGCATGAAGCTCCCGAACGGTGC
4681 TCGCGTTGAATATGAAATGCAGTGGGGTCACATCGGTTGGTCCGTTCCTGCCGCCTTCGG
4741 TTATGCCGTCGGTGCTCCGGAACGTCGCAACATCCTCATGGTTGGTGATGGTTCCTTCCA
4801 GCTGACGGCTCAGGAAGTCGCTCAGATGGTTCGCCTGAAACTGCCGGTTATCATCTTCTT
4861 GATCAATAACTATGGTTACACCATCGAAGTTATGATCCATGATGGTCCGTACAACAACAT
4921 CAAGAACTGGGATTATGCCGGTCTGATGGAAGTGTTCAACGGTAACGGTGGTTATGACAG
4981 CGGTGCTGGTAAAGGCCTGAAGGCTAAAACCGGTGGCGAACTGGCAGAAGCTATCAAGGT
5041 TGCTCTGGCAAACACCGACGGCCCAACCCTGATCGAATGCTTCATCGGTCGTGAAGACTG
5101 CACTGAAGAATTGGTCAAATGGGGTAAGCGCGTTGCTGCCGCCAACAGCCGTAAGCCTGT
5161 TAACAAGCTCCTCTAGTTTTTGGGGATCAATTCGAGCTCGGTACCCAAACTAGTATGTAG
5221 GGTGAGGTTATAGCT

>Start of the adh gene

ATGGCTTCTTCAACTTTTTATATTCCTTTCGTCAACGAAATGGGC
5281 GAAGGTTCGCTTGAAAAAGCAATCAAGGATCTTAACGGCAGCGGCTTTAAAAATGCGCTG
5341 ATCGTTTCTGATGCTTTCATGAACAAATCCGGTGTTGTGAAGCAGGTTGCTGACCTGTTG
5401 AAAGCACAGGGTATTAATTCTGCTGTTTATGATGGCGTTATGCCGAACCCGACTGTTACC
5461 GCAGTTCTGGAAGGCCTTAAGATCCTGAAGGATAACAATTCAGACTTCGTCATCTCCCTC
5521 GGTGGTGGTTCTCCCCATGACTGCGCCAAAGCCATCGCTCTGGTCGCAACCAATGGTGGT
5581 GAAGTCAAAGACTACGAAGGTATCGACAAATCTAAGAAACCTGCCCTGCCTTTGATGTCA
5641 ATCAACACGACGGCTGGTACGGCTTCTGAAATGACGCGTTTCTGCATCATCACTGATGAA
5701 GTCCGTCACGTTAAGATGGCCATTGTTGACCGTCACGTTACCCCGATGGTTTCCGTCAAC
5761 GATCCTCTGTTGATGGTTGGTATGCCAAAAGGCCTGACCGCCGCCACCGGTATGGATGCT
5821 CTGACCCACGCATTTGAAGCTTATTCTTCAACGGCAGCTACTCCGATCACCGATGCTTGC
5881 GCCTTGAAGGCTGCGTCCATGATCGCTAAGAATCTGAAGACCGCTTGCGACAACGGTAAG
5941 GATATGCCAGCTCGTGAAGCTATGGCTTATGCCCAATTCCTCGCTGGTATGGCCTTCAAC
6001 AACGCTTCGCTTGGTTATGTCCATGCTATGGCTCACCAGTTGGGCGGCTACTACAACCTG
6061 CCGCATGGTGTCTGCAACGCTGTTCTGCTTCCGCATGTTCTGGCTTATAACGCCTCTGTC
6121 GTTGCTGGTCGTCTGAAAGACGTTGGTGTTGCTATGGGTCTCGATATCGCCAATCTCGGT
6181 GATAAAGAAGGCGCAGAAGCCACCATTCAGGCTGTTCGCGATCTGGCTGCTTCCATTGGT
6241 ATTCCAGCAAATCTGACCGAGCTGGGTGCTAAGAAAGAAGATGTGCCGCTTCTTGCTGAC
6301 CACGCTCTGAAAGATGCTTGTGCTCTGACCAACCCGCGTCAGGGTGATCAGAAAGAAGTT
6361 GAAGAACTCTTCCTGAGCGCTTTCTAATTTCAAAACAGGAAAACGGTTTTCCGTCCTGTC
6421 TTGATTTTCAAGCAAACAATGCCTCCGATTTCTAATCGGAGGCATTTGTTTTTGTTTATT
6481 GCAAAAACAAAAAATATTGTTACAAATTTTTACAGGCTATTAAGCCTACCGTCATAAATA
6541 ATTTGCCATTTGGGGATCC

TAATTCCTTGGTGTAATGCCAACTGAATAATCTGCAAATTG
6601 CACTCTCCTTCAATGGGGGGTGCTTTTTGCTTGACTGAGTAATCTTCTGATTGCTGATCT

6661 TGATTGCCATCGATCGCCGGGGAGTCCGGGGCAGTTACCATTAGAGAGTCTAGAGAATTA

6721 ATCCATCTTCGATAGAGGAATTATGGGGGAAGAACCTGTGCCGGCGGATAAAGCATTAGG

6781 CAAGAAATTCAAGAAAAAAAATGCCTCCTGGAGCATTGAAGAAAGCGAAGCTCTGTACCG

6841 GGTTGAGGCCTGGGGGGCACCTTATTTTGCCATTAATGCCGCTGGTAACATAACCGTCTC

6901 TCCCAACGGCGATCGGGGCGGTTCGTTAGATTTGTTGGAACTGGTGGAAGCCCTGCGGCA

6961 AAGAAAGCTCGGCTTACCCCTATTAATTCGTTTTTCCGATATTTTGGCCGATCGCCTAGA

7021 GCGATTGAATAGTTGTTTTGCCAAGGCGATCGAATTCGTAATCATGGTCATAGCTGTTTC

7081 CTGTGTGAAATTGTTATCCGCTCACAATTCCACACAACATACGAGCCGGAAGCATAAAGT

7141 GTAAAGCCTGGGGTGCCTAATGAGTGAGCTAACTCACATTAATTGCGTTGCGCTCACTGC

7201 CCGCTTTCCAGTCGGGAAACCTGTCGTGCCAGCTGCATTAATGAATCGGCCAACGCGCGG

7261 GGAGAGGCGGTTTGCGTATTGGGCGC

Apendix III. Creation of pMota via the removal of the NdeI/BamHI fragment from pPSBAIIKS and replacement with the pdc/adh cassette from pLOI295.