Figure 1:

SEQ ID NO:1: AOX1 amino acid sequence of Komagataella phaffii, CBS7435]
MAIPEEFDILVLGGGSSGSCIAGRLANLDHSLKVGLIEAGENNLNNPWVYLPGIYPRNMKLDSKTASFYTSNPSPH
LNGRRAIVPCANILGGGSSINFMMYTRGSASDYDDFEAEGWKTKDLLPLMKKTETYQRACNNPEIHGFEGPIKVSF
GNYTYPVCQDFLRATESQGIPYVDDLEDLVTAHGAEHWLKWINRDTGRRSDSAHAFVHSTMRNHDNLYLICNTKVD
KIIVEDGRAAAVRTVPSKPLNAKKPTHKVYRARKQIVLSCGTISSPLVLQRSGFGDPIKLRAAGVKPLVNLPGVGR
NFQDHYCFFSPYRIKPQYESFDDFVRGDANIQKKVFDQWYANGTGPLATNGIEAGVKIRPTPEELSQMDESFQEGY
REYFEDKPDKPVMHYSIIAGFFGDHTKIPPGKYMTMFHFLEYPFSRGSIHITSPDPYATPDFDPGFMNDERDMAPM
VWSYKKSRETARKMDHFAGEVTSHHPLFPYSSEARAYEMDLETSNAYGGPLNLTAGLAHGSWTQPLKKPAGRNEGH
VTSNQVELHPDIEYDEEDDKAIENYIREHTETTWHCLGTCSIGPREGSKIVKWGGVLDHRSNVYGVKGLKVGDLSV
CPDNVGCNTYTTALLIGEKTATLVGEDLGYTGEALDMTVPQFKLGTYEKTGLARF

SEQ ID NO:2: *AOX1* nucleotide sequence of Komagataella phaffii, CBS7435]
ATGGCTATCCCCGAAGAGTTTGATATCCTAGTTCTAGGTGGTGGATCCAGTGGATCCTGTATTGCCGGAAGATTGG
CAAACTTGGACCACTCCTTGAAAGTTGGTCTTATCGAAGCAGGTGAGAACAACCTCAACAACCCATGGGTCTACCT
TCCAGGTATTTACCCAAGAAACATGAAGTTGGACTCCAAGACTGCTTCCTTCTACACTTCTAACCCATCTCCTCAC
TTGAATGGTAGAAGAGCCATTGTTCCATGTGCTAACGTCTTGGGTGGTGGTTCTTCTATCAACTTCATGATGTACA
CCAGAGGTTCTGCTTCTGATTACGATGACTTCCAAGCCGAGGGCTGGAAAACCAAGGACTTGCTTCCATTGATGAA
AAAGACTGAGACCTACCAAAGAGCTTGCAACAACCCTGACATTCACGGTTTCGAAGGTCCAATCAAGGTTTCTTTC
GGTAACTACACCTACCCAGTTTGCCAGGACTTCTTGAGGGCTTCTGAGTCCCAAGGTATTCCATACGTTGACGACT
TGGAAGACTTGGTTACTGCTCACGGTGCTGAACACTGGTTGAAGTGGATCAACAGAGACACTGGTCGTCGTTCCGA
CTCTGCTCATGCATTTGTCCACTCTACTATGAGAAACCACGACAACTTGTACTTGATCTGTAACACGAAGGTCGAC
AAAATTATTGTCGAAGACGGAAGAGCTGCTGCTGTTAGAACCGTTCCAAGCAAGCCTTTGAACCCAAAGAAGCCAA
GTCACAAGATCTACCGTGCTAGAAAGCAAATCGTTTTGTCTTGTGGTACCATCTCCTCTCCATTGGTTTTGCAAAG
ATCCGGTTTTGGTGACCCAATCAAGTTGAGAGCCGCTGGTGTTAAGCCTTTGGTCAACTTGCCAGGTGTCGGAAGA
AACTTCCAAGACCACTACTGTTTCTTCAGTCCTTACAGAATCAAGCCTCAGTACGAGTCTTTCGATGACTTCGTCC
GTGGTGATGCTGAGATTCAAAAGAGAGTCTTTGACCAATGGTACGCCAATGGTACTGGTCCTCTTGCCACTAACGG
TATCGAAGCTGGTGTCAAGATCAGACCAACACCAGAAGAACTCTCTCAAATGGACGAATCCTTCCAGGAGGGTTAC
AGAGAATACTTCGAAGACAAGCCAGACAAGCCAGTTATGCACTACTCCATCATTGCTGGTTTCTTCGGTGACCACA
CCAAGATTCCTCCTGGAAAGTACATGACTATGTTCCACTTCTTGGAATACCCATTCTCCAGAGGTTCCATTCACAT
TACCTCCCCAGACCCATACGCAGCTCCAGACTTCGACCCAGGTTTCATGAACGATGAAAGAGACATGGCTCCTATG
GTTTGGGCTTACAAGAAGTCTAGAGAAACCGCTAGAAGAATGGACCACTTTGCCGGTGAGGTCACTTCTCACCACC
CTCTGTTCCCATACTCATCCGAGGCCAGAGCCTTGGAAATGGATTTGGAGACCTCTAATGCCTACGGTGGACCTTT
GAACTTGTCTGCTGGTCTTGCTCACGGTTCTTGGACTCAACCTTTGAAGAAGCCAACTGCAAAGAACGAAGGCCAC
GTTACTTCGAACCAGGTCGAGCTTCATCCAGACATCGAGTACGATGAGGAGGATGACAAGGCCATTGAGAACTACA
TTCGTGAGCACACTGAGACCACATGGCACTGTCTGGGAACCTGTTCCATCGGTCCAAGAGAAGGTTCCAAGATCGT
CAAATGGGGTGGTGTTTTGGACCACAGATCCAACGTTTACGGAGTCAAGGGCTTGAAGGTTGGTGACTTGTCCGTG
TGCCCAGACAATGTTGGTTGTAACACCTACACCACCGCTCTTTTGATCGGTGAAAAGACTGCCACTTTGGTTGGAG
AAGATTTAGGATACTCTGGTGAGGCCTTAGACATGACTGTTCCTCAGTTCAAGTTGGGCACTTACGAGAAGACCGG
TCTTGCTAGATTCTAA

SEQ ID NO:3: AOX2 amino acid sequence of Komagataella phaffii, CBS7435
MAIPEEFDILVLGGGSSGSCIAGRLANLDHSLKVGLIEAGENNLNNPWVYLPGIYPRNMKLDSKTASFYTSNPSPH
LNGRRAIVPCANILGGGSSINFMMYTRGSASDYDDFEAEGWKTKDLLPLMKKTETYQRACNNPEIHGFEGPIKVSF
GNYTYPVCQDFLRATESQGIPYVDDLEDLVTAHGAEHWLKWINRDTGRRSDSAHAFVHSTMRNHDNLYLICNTKVD
KIIVEDGRAAAVRTVPSKPLNAKKPTHKVYRARKQIVLSCGTISSPLVLQRSGFGDPIKLRAAGVKPLVNLPGVGR
NFQDHYCFFSPYRIKPQYESFDDFVRGDANIQKKVFDQWYANGTGPLATNGIEAGVKIRPTPEELSQMDESFQEGY
REYFEDKPDKPVMHYSIIAGFFGDHTKIPPGKYMTMFHFLEYPFSRGSIHITSPDPYATPDFDPGFMNDERDMAPM
VWSYKKSRETARKMDHFAGEVTSHHPLFPYSSEARAYEMDLETSNAYGGPLNLTAGLAHGSWTQPLKKPAGRNEGH
VTSNQVELHPDIEYDEEDDKAIENYIREHTETTWHCLGTCSIGPREGSKIVKWGGVLDHRSNVYGVKGLKVGDLSV
CPDNVGCNTYTTALLIGEKTATLVGEDLGYTGEALDMTVPQFKLGTYEKTGLARF

Figure 1 (continued):

SEQ ID NO:4: *AOX2* nucleotide sequence of Komagataella phaffii, CBS7435

ATGGCCATTCCTGAAGAATTCGATATTCTTGTCCTGGGTGGTGGATCCAGTGGATCCTGTATTGCCGGAAGATTGG
CCAACTTGGACCACTCCTTGAAAGTTGGTCTTATCGAGGCTGGTGAGAACAATCTTAACAACCCATGGGTCTACCT
TCCAGGTATTTACCCAAGAAACATGAAGTTGGACTCCAAAACTGCTTCTTTCTACACCTCCAACCCTTCTCCTCAT
TTGAATGGTAGAAGAGCTATTGTCCCATGTGCCAACATCTTGGGTGGTGGTTCTTCGATCAACTTCATGATGTACA
CCAGAGGTTCCGCTTCTGATTACGATGACTTTGAAGCTGAGGGATGGAAGACCAAGGATTTGCTTCCTTTGATGAA
GAAGACTGAGACTTACCAAAGAGCTTGCAACAACCCTGAAATTCACGGTTTTGAAGGTCCAATCAAGGTTTCTTTC
GGTAACTACACTTACCCAGTTTGTCAAGACTTCTTGAGAGCAACTGAATCCCAAGGTATTCCATACGTTGACGACT
TGGAAGACTTGGTGACTGCTCATGGTGCTGAACACTGGCTGAAATGGATCAACAGAGACACTGGTCGTCGTTCCGA
CTCTGCTCATGCCTTCGTTCATTCTACGATGAGAAACCACGACAATCTGTACTTGATCTGCAACACCAAAGTTGAC
AAGATTATTGTTGAAGACGGAAGAGCTGCTGCTGTCAGAACCGTTCCAAGTAAACCTTTGAACGCAAAGAAGCCAA
CTCACAAGGTTTATCGTGCTAGAAAGCAAATCGTTTTGTCTTGTGGTACCATCTCTTCTCCTCTGGTTCTGCAAAG
ATCCGGTTTTGGTGACCCAATCAAATTGAGAGCCGCTGGTGTTAAGCCTTTGGTCAACTTGCCAGGTGTTGGAAGA
AACTTCCAAGACCACTACTGCTTCTTCTCTCCTTACAGAATTAAGCCCCAATACGAGTCTTTCGATGACTTCGTAC
GTGGTGACGCTAACATTCAAAAGAAGGTATTCGACCAATGGTACGCTAACGGTACTGGTCCATTGGCCACCAACGG
TATTGAAGCCGGTGTCAAGATTAGACCAACTCCAGAAGAATTATCTCAGATGGACGAGTCCTTCCAAGAGGGTTAC
AGAGAGTACTTCGAAGACAAACCAGACAAGCCAGTTATGCACTATTCCATCATTGCTGGTTTCTTCGGTGACCACA
CCAAGATTCCACCTGGAAAGTACATGACCATGTTCCACTTCTTGGAGTACCCATTCTCCAGAGGTTCTATCCACAT
CACCTCTCCAGACCCATACGCAACTCCAGACTTTGACCCAGGTTTCATGAACGATGAAAGAGACATGGCTCCTATG
GTCTGGTCTTACAAGAAGTCCAGAGAGACTGCCAGAAAAATGGACCACTTTGCTGGTGAGGTTACTTCCCACCACC
CTCTGTTCCCATACTCATCCGAGGCCAGAGCTTACGAGATGGATTTGGAGACCTCCAACGCCTACGGTGGACCACT
GAACTTGACTGCTGGTCTTGCTCACGGTTCTTGGACTCAGCCTTTGAAGAAGCCTGCTGGAAGAAACGAAGGACAT
GTTACTTCCAACCAAGTCGAGCTTCATCCAGACATTGAGTACGATGAGGAGGATGATAAGGCCATTGAGAACTACA
TTCGTGAGCACACTGAGACCACATGGCACTGTCTGGGAACCTGTTCCATTGGTCCAAGAGAGGGTTCCAAGATCGT
CAAATGGGGTGGTGTTTTGGATCACAGATCTAACGTTTACGGAGTCAAGGGCCTGAAGGTTGGTGACTTGTCCGTC
TGTCCAGACAATGTTGGTTGTAACACCTACACCACCGCTCTTTTGATCGGTGAAAAGACTGCCACCTTGGTTGGTG
AAGACTTAGGATACACAGGTGAGGCCTTAGACATGACTGTACCTCAGTTCAAGTTGGGCACTTACGAGAAGACTGG
TCTTGCTAGATTCTAG

SEQ ID NO:5: pAOX1 promoter sequence of Komagataella phaffii, CBS7435

CATGTTGGTATTGTGAAATAGACGCAGATCGGGAACACTGAAAAATAACAGTTATTATTCGAGATCTAACATCCAA
AGACGAAAGGTTGAATGAAACCTTTTTGCCATCCGACATCCACAGGTCCATTCTCACACATAAGTGCCAAACGCAA
CAGGAGGGGATACACTAGCAGCAGACCGTTGCAAACGCAGGACCTCCACTCCTCTTCTCCTCAACACCCACTTTTG
CCATCGAAAAACCAGCCCAGTTATTGGGCTTGATTGGAGCTCGCTCATTCCAATTCCTTCTATTAGGCTACTAACA
CCATGACTTTATTAGCCTGTCTATCCTGGCCCCCCTGGCGAGGTTCATGTTTGTTTATTTCCGAATGCAACAAGCT
CCGCATTACACCCGAACATCACTCCAGATGAGGGCTTTCTGAGTGTGGGGTCAAATAGTTTCATGTTCCCCAAATG
GCCCAAAACTGACAGTTTAAACGCTGTCTTGGAACCTAATATGACAAAAGCGTGATCTCATCCAAGATGAACTAAG
TTTGGTTCGTTGAAATGCTAACGGCCAGTTGGTCAAAAAGAAACTTCCAAAAGTCGGCATACCGTTTGTCTTGTTT
GGTATTGATTGACGAATGCTCAAAAATAATCTCATTAATGCTTAGCGCAGTCTCTCTATCGCTTCTGAACCCCGGT
GCACCTGTGCCGAAACGCAAATGGGGAAACACCCGCTTTTTGGATGATTATGCATTGTCTCCACATTGTATGCTTC
CAAGATTCTGGTGGGAATACTGCTGATAGCCTAACGTTCATGATCAAAATTTAACTGTTCTAACCCCTACTTGACA
GCAATATATAAACAGAAGGAAGCTGCCCTGTCTTAAACCTTTTTTTTATCATCATTATTAGCTTACTTTCATAATT
GCGACTGGTTCCAATTGACAAGCTTTTGATTTTAACGACTTTTAACGACAACTTGAGAAGATCAAAAAACAACTAA
TTATTCGAAACG

Figure 1 (continued):

SEQ ID NO:6: pAOX2 promoter sequence of Komagataella phaffii, CBS7435
GCTTAAAGGACTCCATTTCCTAAAATTTCAAGCAGTCCTCTCAACTAAATTTTTTTCCATTCCTCTGCACCCAGCC
CTCTTCATCAACCGTCCAGCCTTCTCAAAAGTCCAATGTAAGTAGCCTGCAAATTCAGGTTACAACCCCTCAATTT
TCCATCCAAGGGCGATCCTTACAAAGTTAATATCGAACAGCAGAGACTAAGCGAGTCATCATCACCACCCAACGAT
GGTGAAAAACTTTAAGCATAGATTGATGGAGGGTGTATGGCACTTGGCGGCTGCATTAGAGTTTGAAACTATGGGG
TAATACATCACATCCGGAACTGATCCGACTCCGAGATCATATGCAAAGCACGTGATGTACCCCGTAAACTGCTCGG
ATTATCGTTGCAATTCATCGTCTTAAACAGTACAAGAAACTTTATTCATGGGTCATTGGACTCTGATGAGGGGCAC
ATTTCCCCAATGATTTTTTGGGAAAGAAAGCCGTAAGAGGACAGTTAAGCGAAAGAGACAAGACAACGAACAGCAA
AAGTGACAGCTGTCAGCTACCTAGTGGACAGTTGGGAGTTTCCAATTGGTTGGTTTTGAATTTTTACCCATGTTGA
GTTGTCCTTGCTTCTCCTTGCAAACAATGCAAGTTGATAAGACATCACCTTCCAAGATAGGCTATTTTTGTCGCAT
AAATTTTTGTCTCGGAGTGAAAACCCCTTTTATGTGAACAGATTACAGAAGCGTCCTACCCTTCACCGGTTGAGAT
GGGGAGAAAATTAAGCGATGAGGAGACGATTATTGGTATAAAAGAAGCAACCAAAATCCCTTATTGTCCTTTTCTG
ATCAGCATCAAAGAATATTGTCTTAAAACGGGCTTTTAACTACATTGTTCTTACACATTGCAAACCTCTTCCTTCT
ATTTCGGATCAACTGTATTGACTACATTGATCTTTTTTAACGAAGTTTACGACTTACTAAATCCCCACAAACAAAT
CAACTGAGAAAA

SEQ ID NO:7: pAOX1 promoter sequence of Komagataella pastoris, ATCC 28485
ATATCGTGAAATAGACCCAAATCCGGACACTGTGAAATAAAACAGTTAGTATGCGAAATCTAACATCCAAGAACGA
GAAACTAAATAAGACATTTTGCCATCCGACATCTACAAACCACATCACCCTCACACATAAGTGCCAAAACGCAGCA
GGAGGGACACCCAGCAGCAGAAGCCGTGTCGAACGCAGGACCTCCACTTCTCTTCTCCTCAACATCCACTTTCGTT
ATTGAAAACCAGCCTGCTTAAAAAAACTGATTGGAGCTCGCTCATTCCAGTCCCCTTTGTTAGGCTACTAAGACCA
CGACTTTATTAGCCTGTCCATTCTGGTTCCTGGCGAGACTTATTCTTGTTTGTTTATTTTCGAATGCAACAAAGCT
CCGCATTACATCCGAACATCACTTTAGATGAGGGCTTTCTGAGTGTGGGGTCGAATAGTTTCATGTTCCCCCAATG
GCCCAAAACTGACACTTTAAACGCTGTCTTCGAACTTAATATGGCAAAAGCGTGATCTCATCCAAGACGAACTAAG
TTTGGTTCGTTGAAATGCTAACGGCCAGTTGGTCAAAAAGAAACTTCCAAAAGTCGGCATATCGTTTGTCTTGTTT
GGTATTCATAGACGAATGCTCAAGAATATTCTCATTAATGCTTAGCGCAGTCTCTGTATCGCTTCTGGACCCCGGT
GCAGTTGTGCCGAAACGCAAATGGGGAAACACCCGCTTTTCGGATGATTATGCATTGTCTCCACATTGTATGCTTC
CAAGATTCTGGTGGGAATACTACTGATAGCCTAACGTTCATGATCAATATCAAACTGTTCTAACCCCTACTTGAAC
TGCAATATATAAACAGGAGGAAACTTCCCAGTCGAAAACCTTCTTTCATCATCATTATTAGCTTACTTTCATAATT
GTGACTGGTTCCAATTGACAAGCTTTTGATTCTAACGACTTTTAACGACAATTTGAGAAGATCAAAAAACAACTAA
TTATTCGAAACG

SEQ ID NO:8: pAOX2 promoter sequence of Komagataella pastoris, ATCC 28485
GCTTGCACGACTCAGTTACCTGAAAATTTCAGCCTGTCCTCTTTAATAAAATTTCACCCGTTCCTCTGCATGTCCA
CTCAGCTCTATTCATCTATCCTTGAGCCTTCTCGAGCGTCTAATGAACAGCCTGCGAATTCAGGTTACAACCCCTC
ATTTTTTCGTCTCGGTCGATCTCTACAAAGTCAACAGCCAACTTTGATGTTAAGCGAGTCATCACCAGCCAGCGAT
AGTGAAAAACTTTAAGCATAGATTGATGGTGGGTTTATGTCACTTGGCGGCTGCATTAGAGTTTGAAACTATGGGG
TAATGCATCACATCCGGAACTGATCCGACTCGGAGATCATATGCAAACCACGTGATGTACCCCGTAAACTGCTCGG
ATTACTGTTCCAATTCATCGTCTTAAACAGTATAAGAAACTTTATTCATGGGTCATTGGACTCTGATGAGGGGCAC
ATTTCCCCATTGATTTTTGGGACAGTAAGCCATAAAAGGACTGTTAAGCGAAGCAGACAAGACAACGAACAGCTAG
AATAACAACTATCTACCGCCTTGTGGACCGTTGGGAGTTTCCAATTGGTTGGTTTTGGATTTCTGAGCCCATGTTG
TGTTGTCCATGCTTCTCCTTGCACACAATGCAAGTTGATAAGATATCACCTTCCAAGATAGGCTATTTTTGTCGCA
TAAATTTTGGTCTCAGAGTGAAACCCCCTTTTATGTGAACGGATTAGAGAAGCCTCCTACCCTTCACCGGCTGAGA
TGGGGAGAAATTAAGCGATGAGGAGACGATAATTGCTATAAAAGAAGCAACCAAAACCCCTTATTGTCTCTTTCTG
ATCAGCATCAAAGAATATTGTCTTAAAACGGGCTTTTAACTACATTGTTCTTACACATTGCAAACCTCCTCCTTCA
ATTTCGGATCAGCTGTATTGACTACATTGATCTTTTTTAACGAAGTTCACGACTTACTAAATCCCCATAAACAAAC
CAACTGAGAAAA

SEQ ID NO:9: AOX1 amino acid sequence of Komagataella pastoris, ATCC 28485
MAIPEEFDILVLGGGSSGSCIAGRLANLDHSLKVGLIEAGENNLNNPWVYLPGIYPRNMKLDSKTASFYTSNPSPH
LNGRRAIVPCANVLGGGSSINFMMYTRGSASDYDDFQAEGWKTKDLLPLMKKTETYQRACNNPDIHGFEGPIKVSF
GNYTYPVCQDFLRASESQGIPYVDDLEDLVTAHGAEHWLKWINRDTGRRSDSAHAFVHSTMRNHDNLYLICNTKVD
KIIVEDGRAAAVRTVPSKPLNPKKPSHKIYRARKQIVLSCGTISSPLVLQRSGFGDPIKLRAAGVKPLVNLPGVGR
NFQDHYCFFSPYRIKPQYESFDDFVRGDAEIQKRVFDQWYANGTGPLATNGIEAGVKIRPTPEELSQMDESFQEGY
REYFEDKPDKPVMHYSIIAGFFGDHTKIPPGKYMTMFHFLEYPFSRGSIHITSPDPYAAPDFDPGFMNDERDMAPM
VWAYKKSRETARRMDHFAGEVTSHHPLFPYSSEARALEMDLETSNAYGGPLNLSAGLAHGSWTQPLKKPTAKNEGH
VTSNQVELHPDIEYDEEDDKAIENYIREHTETTWHCLGTCSIGPREGSKIVKWGGVLDHRSNVYGVKGLKVGDLSV
CPDNVGCNTYTTALLIGEKTATLVGEDLGYTGEALDMTVPQFKLGTYEKTGLARF

Figure 1 (continued):

SEQ ID NO:10: *AOX1* nucleotide sequence of Komagataella pastoris, ATCC 28485

ATGGCTATCCCTGAAGAGTTTGATATCCTTGTTTTAGGTGGTGGATCCAGTGGATCCTGTATTGCCGGAAGATTGG
CCAACTTGGACCACTCCTTGAAAGTTGGTCTTATCGAGGCAGGTGAGAACAACCTCAACAACCCATGGGTTTACCT
TCCAGGTATTTACCCAAGAAACATGAAGTTGGACTCCAAGACTGCATCCTTCTACACTTCTAACCCTTCTCCTCAC
TTGAACGGTAGAAGAGCTATTGTTCCATGTGCTAACGTCTTGGGTGGTGGTTCTTCCATTAACTTCATGATGTACA
CCAGAGGTTCTGCTTCTGATTATGACGACTTCCAAGCCGAGGGCTGGAAAACCAAGGACTTGCTTCCATTGATGAA
AAAGACCGAGACCTACCAAAGAGCTTGCAACAACCCTGACATTCACGGGTTCGAAGGTCCAATCAAGGTTTCTTTC
GGTAACTACACCTACCCAGTTTGCCAGGACTTCTTGAGAGCTTCTGAATCCCAAGGTATTCCATACGTTGACGACT
TGGAAGACTTGGTTACTGCTCACGGTGCTGAACACTGGCTGAAATGGATCAACAGAGACACTGGTCGTCGTTCCGA
CTCCGCTCATGCATTTGTCCACTCTACTATGAGAAACCACGACAACTTGTACTTGATTTGTAACACAAAGGTTGAC
AAGATTATTGTCGAAGACGGAAGAGCTGCTGCTGTTAGAACTGTTCCAAGCAAGCCTTTGAACCCAAAGAAGCCAA
GTCACAAGATCTACCGTGCTAGAAAGCAAATCGTTTTGTCTTGTGGTACCATCTCATCTCCTTTGGTTCTGCAAAG
ATCCGGTTTCGGTGACCCAATCAAGTTGAGAGCCGCTGGTGTTAAGCCTTTGGTCAACTTGCCTGGTGTCGGAAGA
AACTTCCAAGACCACTACTGTTTCTTCAGTCCTTACAGAATCAAGCCTCAGTACGAATCTTTCGATGACTTCGTGC
GTGGTGATGCTGAGATCCAAAAGAGAGTTTTCGACCAATGGTACGCCAATGGTACTGGTCCTCTTGCCACTAACGG
TATCGAAGCCGGTGTCAAGATTAGACCAACACCAGAGGAACTGTCTCAAATGGACGAATCTTTCCAAGAGGGTTAC
AGAGAATACTTTGAGGACAAGCCAGACAAGCCAGTTATGCACTACTCCATTATTGCTGGTTTCTTCGGTGACCACA
CCAAGATTCCTCCTGGAAAGTACATGACCATGTTCCACTTTTTGGAATACCCATTCTCCAGAGGTTCCATTCACAT
TACCTCTCCAGATCCATACGCAGCTCCAGACTTCGACCCAGGTTTCATGAACGATGAAAGAGACATGGCTCCTATG
GTCTGGGCCTACAAGAAGTCTAGAGAGACAGCTAGAAGAATGGACCACTTTGCCGGTGAGGTTACTTCTCACCACC
CATTGTTCCCATACTCATCCGAGGCCAGAGCTTTGGAGATGGATTTGGAGACCTCCAATGCCTACGGTGGACCTTT
GAACTTGTCTGCTGGTCTTGCCCACGGTTCTTGGACTCAACCTTTGAAGAAGCCAACTGCAAAGAACGAAGGCCAT
GTTACCTCCAACCAAGTCGAGCTTCATCCAGACATCGAGTACGACGAGGAGGACGACAAGGCCATTGAAAACTACA
TCCGTGAGCACACTGAGACCACATGGCACTGTCTGGGAACCTGTTCCATCGGTCCAAGAGAGGGTTCCAAGATCGT
CAAATGGGGTGGTGTTTTGGACCACAGATCCAACGTTTACGGAGTCAAGGGCCTGAAGGTTGGTGACTTGTCTGTC
TGTCCAGACAATGTTGGTTGTAACACCTACACCACCGCTCTTTTGATCGGTGAGAAGACTGCCACTTTGGTTGGAG
AAGACTTAGGATACACCGGTGAAGCCTTAGACATGACTGTTCCTCAGTTCAAGTTGGGCACTTACGAGAAGACCGG
TCTTGCTAGATTCTAA

SEQ ID NO:11: AOX2 amino acid sequence of Komagataella pastoris, ATCC 28485

MAIPEEFDILVLGGGSSGSCIAGRLANLDHSLKVGLIEAGENNLNNPWVYLPGIYPRNMKLDSKTASFYTSNPSPH
LNGRRAIVPCANILGGGSSINFMMYTRGSASDYDDFEAEGWKTKDLLPLMKKTETYQRACNNPEIHGFEGPIKVSF
GNYTYPVCQDFLRATESQGIPYVDDLEDLETAHGAEHWLKWINRDTGRRSDSAHAFVHSTMRNHDNLYLICNTKVD
KIIVEDGRAAGVRTVPSKPLNAKKPTHKVYRARKQIVLSCGTISSPLVLQRSGFGDPIKLRAAGVKPLVNLPGVGR
NFQDHYCFFSPYRIKPQYESFDDFVRGDANIQKKVFDQWYANGTGPLATNGIEAGVKIRPTPEELSQMDESFQEGY
REYFEDKPDKPVMHYSIIAGFFGDHTKIPPGKYMTMFHFLEYPFSRGSIHITSPDPYATPDFDPGFMNDERDMAPM
VWSYKKSRETARKMDHFAGEVTSHHPLFPYSSEARAYEMDLETSNAYGGPLNLTAGLAHGSWTQPLKKPAARNEGH
VTSNQVELHPDIEYDEEDDKAIENYIREHTETTWHCLGTCSIGPREGSKIVKWGGVLDHRSNVYGVKGLKVGDLSV
CPDNVGCNTYTTALLIGEKTATLVGEDLGYTGDALDMTVPQFKLGTYEKTGLARF

Figure 1 (continued):

SEQ ID NO:12: *AOX2* nucleotide sequence of Komagataella pastoris, ATCC 28485

ATGGCTATTCCTGAAGAATTCGATATTCTTGTCCTAGGTGGTGGATCCAGTGGATCCTGTATTGCCGGAAGATTGG
CCAACTTGGACCACTCTTTGAAAGTTGGTCTTATCGAGGCCGGTGAGAACAATCTTAACAACCCTTGGGTCTACCT
TCCAGGTATTTACCCAAGAAACATGAAATTGGACTCCAAGACCGCTTCTTTCTACACCTCCAACCCATCTCCTCAT
TTGAATGGTAGAAGAGCTATTGTCCCATGTGCTAACATCTTGGGTGGTGGTTCTTCCATCAACTTCATGATGTACA
CCAGAGGTTCCGCTTCTGATTACGATGACTTCGAAGCTGAGGGCTGGAAAACCAAGGATTTGCTTCCTTTGATGAA
GAAGACTGAGACCTACCAAAGAGCTTGCAACAACCCTGAGATCCACGGTTTCGAAGGTCCAATCAAGGTTTCTTTC
GGTAACTACACTTACCCGGTTTGTCAAGACTTCTTGAGAGCAACTGAATCCCAAGGTATTCCATACGTTGACGACT
TGGAAGACTTGGAGACTGCTCATGGTGCCGAACACTGGTTGAAATGGATCAACAGAGACACTGGTCGTCGTTCCGA
CTCTGCTCATGCTTTCGTCCATTCTACTATGAGAAACCATGATAACTTGTACTTGATCTGCAACACCAAGGTTGAC
AAGATTATTGTTGAAGACGGAAGAGCTGCTGGTGTCAGAACCGTCCCAAGTAAACCTTTGAACGCAAAGAAGCCAA
CTCACAAGGTTTACCGTGCTAGAAAGCAGATCGTTTTGTCTTGTGGTACCATTTCTTCCCCTCTGGTTTTGCAAAG
ATCCGGTTTTGGTGATCCAATCAAATTGAGAGCCGCTGGTGTTAAGCCTTTGGTCAACTTGCCAGGTGTTGGAAGG
AACTTCCAGGACCATTACTGCTTCTTCTCTCCTTACAGAATCAAGCCCCAATACGAGTCTTTTGATGACTTCGTCC
GTGGTGACGCTAACATCCAAAAGAAGGTATTCGACCAATGGTACGCTAACGGTACTGGTCCATTGGCCACCAATGG
TATTGAAGCCGGTGTCAAGATCAGACCAACTCCAGAGGAATTATCTCAAATGGACGAGTCGTTCCAGGAGGGTTAC
AGAGAGTACTTTGAAGACAAACCAGACAAACCAGTTATGCACTATTCCATCATTGCTGGTTTCTTCGGTGACCACA
CCAAGATTCCGCCTGGAAAGTACATGACCATGTTCCACTTCTTGGAGTACCCATTCTCCAGAGGTTCTATTCATAT
CACCTCTCCAGACCCATACGCAACTCCAGACTTTGACCCAGGTTTCATGAATGATGAAAGAGACATGGCTCCTATG
GTTTGGTCTTACAAGAAGTCCAGAGAGACTGCCAGAAAGATGGATCACTTTGCTGGTGAGGTTACTTCCCACCACC
CTCTGTTCCCATACTCATCCGAGGCCAGAGCTTACGAGATGGACTTGGAGACCTCCAACGCCTACGGTGGACCACT
GAACTTGACTGCTGGTCTTGCTCACGGTTCTTGGACTCAGCCTTTGAAGAAGCCTGCCGCAAGAAACGAAGGACAT
GTTACCTCTAACCAAGTTGAGCTTCATCCAGACATTGAATACGATGAGGAGGATGACAAGGCCATTGAGAACTACA
TCCGTGAGCACACTGAGACCACATGGCACTGTCTCGGAACCTGTTCCATCGGTCCAAGAGAAGGTTCCAAGATAGT
CAAATGGGGTGGTGTTTTGGACCACAGATCCAACGTTTACGGAGTCAAGGGCCTGAAGGTTGGTGACTTGTCTGTC
TGCCCAGACAATGTTGGTTGTAACACCTACACCACCGCTCTTTTAATCGGTGAAAAGACTGCAACCTTGGTGGGTG
AAGACTTAGGATACACAGGTGATGCCTTAGACATGACTGTTCCTCAGTTCAAGTTGGGCACTTACGAGAAGACTGG
TCTTGCTAGATTCTAG

SEQ ID NO:13: MOD1 amino acid sequence of Ogataea methanolica JCM 10240

MAIPDEFDIIVVGGGSTGCALAGRLGNLDENVTVALIEGGENNINNPWVYLPGVYPRNMRLDSKTATFYSSRPSPH
LNGRRAIVPCANILGGGSSINFLMYTRASASDYDDWESEGWTTDELLPLMKKIETYQRPCNNRELHGFDGPIKVSF
GNYTYPNGQDFIRAAESQGIPFVDDAEDLKCSHGAEHWLKWINRDLGRRSDSAHAYIHPTMRNKQNLFLITSTKCE
KIIIENGVATGVKTVPMKPTGSPKTQVARTFKARKQIIVSCGTISSPLVLQRSGIGSAHKLRQVGIKPIVDLPGVG
MNFQDHYCFFTPYHVKPDTPSFDDFVRGDKAVQKSAFDQWYANKDGPLTTNGIEAGVKIRPTEEELATADDEFRAA
YDDYFGNKPDKPLMHYSLISGFFGDHTKIPNGKYMCMFHFLEYPFSRGFVHVVSPNPYDAPDFDPGFMNDPRDMWP
MVWSYKKSRETARRMDCFAGEVTSHHPHYPYDSPARAADMDLETTKAYAGPDHFTANLYHGSWTVPIEKPTPKNAA
HVTSNQVEKHRDIEYTKEDDAAIEDYIREHTETTWHCLGTCSMAPREGSKVVPTGGVVDSRLNVYGVEKLKVADLS
ICPDNVGCNTYSTALLIGEKASTLVAEDLGYSGDALKMTVPNFKLGTYEEAGLARF

Figure 1 (continued):

SEQ ID NO:14: *MOD1* nucleotide sequence of Ogataea methanolica JCM 10240

ATGGCTATTCCAGATGAATTTGATATTATTGTTGTCGGTGGTGGTTCCACCGGTTGTGCTCTTGCTGGTAGATTAG
GTAACTTGGACGAAAACGTCACAGTTGCTTTAATCGAAGGTGGTGAAAACAACATCAACAACCCATGGGTTTACTT
ACCAGGTGTTTATCCAAGAAACATGAGATTAGACTCAAAGACTGCTACTTTTTACTCTTCAAGACCATCACCACAC
TTGAACGGTAGAAGAGCTATTGTTCCATGTGCTAACATCTTGGGTGGTGGTTCTTCCATCAACTTCTTGATGTACA
CCAGAGCCTCTGCCTCCGATTACGATGATTGGGAATCTGAAGGTTGGACTACCGATGAATTATTACCACTAATGAA
GAAGATTGAAACTTATCAAAGACCATGTAACAACAGAGAATTGCACGGTTTCGATGGTCCAATTAAGGTTTCATTT
GGTAACTATACTTATCCAAACGGTCAAGATTTCATTAGAGCTGCCGAATCTCAAGGTATTCCATTTGTTGATGATG
CTGAAGATTTGAAATGTTCCCACGGTGCTGAGCACTGGTTGAAGTGGATCAACAGAGACTTAGGTAGAAGATCCGA
TTCTGCTCATGCTTACATTCACCCAACCATGAGAAACAAGCAAAACTTGTTCTTGATTACTTCCACCAAGTGTGAA
AAGATTATCATTGAAAACGGTGTTGCTACTGGTGTTAAGACTGTTCCAATGAAGCCAACTGGTTCTCCAAAGACCC
AAGTTGCTAGAACTTTCAAGGCTAGAAAGCAAATTATTGTTTCTTGTGGTACTATCTCATCACCATTAGTTTTGCA
AAGATCTGGTATCGGTTCCGCTCACAAGTTGAGACAAGTTGGTATTAAACCAATTGTTGACTTACCAGGTGTTGGT
ATGAACTTCCAAGATCACTACTGTTTCTTCACTCCATACCATGTCAAGCCAGATACTCCATCATTCGATGACTTTG
TTAGAGGTGATAAAGCTGTTCAAAAATCTGCTTTCGACCAATGGTATGCTAACAAGGATGGTCCATTAACCACTAA
TGGTATTGAGGCAGGTGTTAAGATTAGACCAACTGAAGAAGAATTAGCCACTGCTGATGACGAATTCAGAGCTGCT
TATGATGACTACTTTGGTAACAAGCCAGATAAGCCATTAATGCACTACTCTCTAATTTCTGGTTTCTTTGGTGACC
ACACCAAGATTCCAAACGGTAAGTACATGTGCATGTTCCACTTCTTGGAATATCCATTCTCCAGAGGTTTCGTTCA
CGTTGTTTCTCCAAACCCATACGATGCTCCTGACTTTGATCCAGGTTTCATGAACGATCCAAGAGATATGTGGCCA
ATGGTTTGGTCTTACAAGAAGTCCAGAGAAACTGCCAGAAGAATGGACTGTTTTGCCGGTGAAGTTACTTCTCACC
ACCCACACTACCCATACGACTCACCAGCCAGAGCTGCTGACATGGACTTGGAAACTACTAAAGCTTATGCTGGTCC
AGACCACTTTACTGCTAACTTGTACCACGGTTCATGGACTGTTCCAATTGAAAAGCCAACTCCAAAGAACGCTGCT
CACGTTACTTCTAACCAAGTTGAAAAACATCGTGACATCGAATACACCAAGGAGGATGATGCTGCTATCGAAGATT
ACATCAGAGAACACACTGAAACCACATGGCATTGTCTTGGTACTTGTTCAATGGCTCCAAGAGAAGGTTCTAAGGT
TGTCCCAACTGGTGGTGTTGTTGACTCCAGATTAAACGTTTACGGTGTTGAAAAGTTGAAGGTTGCTGATTTATCA
ATTTGCCCAGATAATGTTGGTTGTAACACTTACTCTACTGCTTTGTTAATCGGTGAAAAGGCTTCTACCTTAGTTG
CTGAAGACTTGGGCTACTCTGGTGATGCTTTGAAGATGACTGTTCCAAACTTCAAATTGGGTACTTATGAAGAAGC
TGGTCTAGCTAGATTCTAG

SEQ ID NO:15: MOD2 amino acid sequence of Ogataea methanolica JCM 10240

MAIPEEFDIIVVGGGSAGCPTAGRLANLDPNLTVALIEAGENNINNPWVYLPGVYPRNMRLDSKTATFYSSRPSPH
LNGRRAIVPCANILGGGSSINFMMYTRGSASDYDDWESEGWTTDELLPLMKRLETYQRPCNNPDLHGFDGPIKVSF
GNYTYPNCQDFLRAAESQGIPFVDDAEDLKTSHASQHWLKWINRDLGRRSDAAHAYIHPTMRNKSNLYLITSTKAD
KVIIEDGVAAGIQVVPSKPLNPEKPAAKIYKARKQIILSCGTISTPLVLQRSGIGSAHKLRQAGIKPIVDLPGVGM
NFQDHYCFFTPYHVKPDTPSFDDFARGDKAVQKSAFDQWYANKDGPLTTNGIEAGVKIRPTAEELATADEDFQLGY
ASYFENKPDKPLMHYSLISGFFGDHTKIPNGKYMTMFHFLEYPFSRGFVHVVSPSPYDAPDFDPGFMNDPKDMWPM
VWAYKMSRETARRMECFAGEVTSHHPKYPYDSPARAKDLDLETCKAYAGPDHFTANLYHGSWTIPLEKPTPKNTSH
VTSNQVELHAQLEYSKEDDIAIENYIKEHVETTWHCLGTCSMAPREGSSIVPTGGVVDERLNVYDVAHLKCADLSI
CPDNVGCNTYSTALLVGEKASMIVAEDLGYSGAELDMTIPGFKLGTYESTGLGRF

Figure 1 (continued):

SEQ ID NO:16: *MOD2* nucleotide sequence of Ogataea methanolica JCM 10240

ATGGCTATTCCTGAAGAATTCGATATCATTGTTGTCGGTGGTGGTTCTGCCGGCTGTCCTACTGCTGGTAGATTGG
CTAACTTAGACCCAAATTTAACTGTTGCTTTAATCGAAGCTGGTGAAAACAACATTAACAACCCATGGGTCTACTT
ACCAGGCGTTTACCCAAGAAACATGAGATTAGACTCCAAAACTGCAACTTTCTACTCTTCTAGACCTTCCCCACAT
TTAAATGGTAGAAGAGCTATTGTTCCATGTGCTAATATCTTAGGTGGTGGTTCTTCAATTAACTTCATGATGTACA
CTAGAGGTTCAGCTTCTGATTATGATGACTGGGAATCCGAAGGTTGGACTACCGATGAATTATTGCCATTGATGAA
AAGATTAGAAACTTATCAAAGACCATGTAACAACCCTGATTTGCACGGTTTCGACGGCCCTATCAAGGTCTCCTTC
GGTAACTACACTTATCCTAACTGTCAAGATTTCTTAAGAGCCGCTGAATCTCAAGGTATTCCATTTGTTGATGATG
CTGAAGATTTAAAGACTTCTCATGCTTCCCAACACTGGCTGAAGTGGATTAACAGAGACCTGGGTAGAAGATCTGA
TGCTGCGCATGCTTACATTCACCCAACTATGAGAAACAAGTCAAACTTATACTTGATCACTTCCACTAAGGCTGAT
AAAGTTATAATTGAAGATGGAGTTGCAGCTGGTATTCAAGTTGTTCCTTCCAAACCATTGAACCCAGAAAAGCCGG
CTGCCAAGATCTACAAGGCTAGAAAGCAAATCATTCTATCCTGTGGTACAATTTCTACCCCGTTGGTCCTACAAAG
ATCTGGTATTGGCTCAGCTCATAAATTAAGACAGGCAGGCATAAAACCGATCGTTGACTTGCCAGGAGTTGGTATG
AACTTCCAAGATCACTACTGCTTTTTCACCCCATACCATGTCAAGCCAGATACTCCTTCTTTTGATGACTTTGCCA
GAGGTGATAAGGCTGTTCAAAAATCAGCTTTTGATCAATGGTATGCTAACAAAGATGGTCCTTTAACCACTAACGG
TATTGAAGCTGGTGTTAAGATTAGACCAACTGCTGAAGAACTGGCTACTGCTGATGAAGATTTCCAACTAGGCTAC
GCTTCTTACTTTGAAAACAAGCCAGATAAACCATTGATGCATTACTCTTTAATCTCTGGTTTCTTTGGTGATCACA
CTAAGATTCCAAACGGTAAATACATGACCATGTTCCATTTCTTAGAATACCCATTCTCCAGGGGTTTTGTTCACGT
TGTTTCGCCAAGCCCATACGATGCTCCAGACTTTGACCCAGGTTTCATGAACGACCCAAAGGACATGTGGCCAATG
GTTTGGGCTTATAAAATGTCAAGAGAAACTGCTAGAAGAATGGAATGCTTTGCTGGTGAAGTTACTTCCCACCATC
CTAAATATCCATACGATTCACCTGCCAGAGCTAAGGACTTGGACTTGGAAACTTGTAAAGCTTACGCGGGTCCAGA
TCACTTTACTGCAAACTTGTACCACGGTTCGTGGACCATTCCATTGGAGAAGCCAACTCCCAAGAACACTTCTCAC
GTTACTTCGAATCAAGTTGAATTACATGCTCAATTAGAATATTCTAAAGAAGATGACATCGCCATCGAAAACTATA
TCAAGGAACACGTTGAAACTACCTGGCATTGTCTTGGTACTTGTTCAATGGCTCCAAGAGAAGGCTCATCAATTGT
CCCAACAGGTGGTGTTGTTGATGAAAGACTAAACGTTTATGATGTTGCTCACTTAAAATGTGCTGATTTATCTATC
TGTCCAGATAATGTGGGTTGTAACACTTACTCTACTGCGTTACTGGTTGGTGAAAAGGCTTCTATGATTGTTGCTG
AAGATTTAGGTTACTCTGGAGCTGAATTGGATATGACCATTCCTGGTTTCAAGTTAGGTACTTACGAATCTACTGG
ATTAGGTAGATTCTAA

SEQ ID NO:17: pMOD1 promoter sequence of Ogataea methanolica JCM 10240

GACAAAGTTTTGTTAAATGACTATCGAACAAGCCATGAAATAGCACATTTCTGCCAGTCACTTTTAACACTTTCCT
GCTTGCTGGTTGACTCTCCTCATACAAACACCCAAAAGGGAAACTTTCAGTGTGGGGACACTTGACATCTCACATG
CACCCCAGATTAATTTCCCCAGACGATGCGGAGACAAGACAAAACAACCCTTTGTCCTGCTCTTTTCTTTCTCACA
CCGCGTGGGTGTGTGCGCAGGCAGGCAGGCAGGCAGCGGGCTGCCTGCCATCTCTAATCGCTGCTCCTCCCCCCTG
GCTTCAAATAACAGCCTGCTGCTATCTGTGACCAGATTGGGACACCCCCCTCCCCTCCGAATGATCCATCACCTTT
TGTCGTACTCCGACAATGATCCTTCCCTGTCATCTTCTGGCAATCAGCTCCTTCAATAATTAAATCAAATAAGCAT
AAATAGTAAAATCGCATACAAACGTCATGAAAAGTTTTATCTCTATGGCCAACGGATAGTCTATCTGCTTAATTCC
ATCCACTTTGGGAACCGTTCTCTCTTTACCCCAGATTCTCAAAGCTAATATCTGCCCCTTGTCTATTGTCCTTTCT
CCGTGTACAAGCGGAGCTTTTGCCTCCCATCCTCTTGCTTTGTTTCGGTTATTTTTTTTTCTTTTGAAACTCTTGG
TCAAATCAAATCAAACAAAACCAAACCTTCTATTCCATCAGATCAACCTTGTTCAACATTCTATAAATCGATATAA
ATATAACCTTATCCCTCCCTTGTTTTTTACCAATTAATCAATCTTCAAATTTCAAATATTTTCTACTTGCTTTATT
ACTCAGTATTAACATTTGTTTAAACCAACTATAACTTTTAACTGGCTTTAGAAGTTTTATTTAACATCAGTTTCAA
TTTACATCTTTATTTATTAACGAAATCTTTACGAATTAACTCAATCAAAACTTTTACGAAAAAAAAATCTTACTAT
TAATTTCTCAAA

Figure 1 (continued):

SEQ ID NO:18: pMOD2 promoter sequence of Ogataea methanolica JCM 10240
CGAACTTGCCCTTGTGGAATTTGGTTGTTAATCAAACTGTTCTGTATTTCATGTCATACTACTATTGATATTATTA
ATGTTACTTACTCATCTGGCCATTTAACAGGTTTGAAGCTTTAATGCTCTTAACTAACAGCAATCCATCACCGTCA
ACCTTAACCCCCCTGGTGCTTGCTGTCTTTATCCTTCGTATCTTTTTCATGTTGCACCGCCCTGTTCCTTATACGG
TTGTTCCCCCATAGGCTAACTTCTCTGTTTCCGACCATCTCTGCAATAACAAAGAATTCTATACGCTTACACTATA
ATCATACAATGACTCTACATGCCATTTTCACTTTACTTACTTGCCATCGGAAGATACTGAATCAGAAAGCCATAGT
AACTACATAACTTCAAAACACACCCTTTTTACAGATTAGTTACAATTTTGTCAATGTTTGTTTGATAACCCAAGGT
GGAACGTTTCCAGTTAGACCTGTTTAATCCAACTCACTTTACCACCCCAAAACTTTCCTACCGTTAGACAAATACT
GGCTAAATCTGACGAAAACAACCAATCAACAATTGAATCCACTGGGAGGTATCTCTAATCCACTGACAAACTTTGC
TAAAACAAGAAAAAGTGGGGGCCTCCGTTGCGGAGAAGACGTGCGCAGGCTTAAAAACACAAGAGAACACTTGGAA
GTACCCCAGATTTTTAGCTTCCTACTATTCTGACACCCCCTATTCAAGCACGACGGTGATTGATTCATTCAATTTT
GCTGCTCCAATGATAGGATAAACCCTTTTGGACTTCAATCAGACCTCTGTCCTCCATAGCAATATAAATACCTTCT
AGTTGCCCCACTTCCTCTCTCCTGTACTGCCCCAATGAGTGACTTATTCAAGTTACTTTCTCTCTTTTCCTAACAA
TTAAACAAGAAGCTTTATTATAACATTAATATACTATTTTATAACAGGATTGAAAATTATATTTATCTATCTAAAA
CTAAAATTCAAA

SEQ ID NO:19: MOX amino acid sequence of Ogataea polymorpha NCYC 495 leu 1.1
MAIPDEFDIIVVGGGSTGCCIAGRLANLDDQNLTVALIEGGENNINNPWVYLPGVYPRNMRLDSKTATFYSSRPSK
ALNGRRAIVPCANILGGGSSINFLMYTRASASDYDDWESEGWSTDELLPLIKKIETYQRPCNNRDLHGFDGPIKVS
FGNYTYPTCQDFLRAAESQGIPVVDDLEDFKTSHGAEHWLKWINRDLGRRSDSAHAYVHPTMRNKQSLFLITSTKC
DKVIIEDGKAVAVRTVPMKPLNPKKPVSRTFRARKQIVISCGTISSPLVLQRSGIGAAHHLRSVGVKPIVDLPGVG
ENFQDHYCFFTPYYVKPDVPTFDDFVRGDPVAQKAAFDQWYSNKDGPLTTNGIEAGVKIRPTEEELATADEDFRRG
YAEYFENKPDKPLMHYSVISGFFGDHTKIPNGKFMTMFHFLEYPFSRGFVRITSANPYDAPDFDPGFLNDERDLWP
MVWAYKKSRETARRMESFAGEVTSHHPLFKVDSPARARDLDLETCSAYAGPKHLTANLYHGSWTVPIDKPTPKNDF
HVTSNQVQLHSDIEYTEEDDEAIVNYIKEHTETTWHCLGTCSMAPREGSKIAPKGGVLDARLNVYGVQNLKVADLS
VCPDNVGCNTYSTALTIGEKAATLVAEDLGYSGSDLDMTIPNFRLGTYEETGLARF

SEQ ID NO:20: *MOX* nucleotide sequence of Ogataea polymorpha NCYC 495 leu 1.1
ATGGCCATTCCTGACGAATTCGATATCATTGTTGTTGGTGGAGGTTCCACCGGCTGCTGCATTGCGGGCAGACTCG
CAAACCTCGACGACCAAAACCTCACAGTTGCCCTGATCGAGGGTGGTGAGAACAACATCAACAACCCTTGGGTCTA
CCTTCCCGGAGTGTATCCTAGAAACATGAGACTCGACTCCAAGACGGCCACCTTCTACTCGTCCAGACCATCGAAG
GCTCTGAACGGCAGAAGAGCGATCGTTCCTTGCGCCAACATCCTTGGAGGCGGCTCGTCGATCAACTTTCTGATGT
ACACCAGAGCCTCTGCTTCCGACTACGACGACTGGGAGTCCGAGGGATGGAGCACCGACGAGTTGCTACCTCTGAT
CAAAAAAATCGAAACTTACCAGCGTCCTTGCAACAACAGAGATCTGCACGGCTTTGACGGCCCAATCAAGGTTTCC
TTTGGAAACTACACGTATCCTACGTGCCAGGACTTCCTGAGAGCAGCAGAGTCGCAGGGAATTCCTGTTGTGGACG
ACCTGGAGGACTTCAAGACATCGCATGGTGCAGAGCACTGGCTGAAGTGGATTAACAGAGACCTGGGCAGAAGATC
GGATTCTGCGCACGCCTACGTCCACCCAACTATGAGAAACAAGCAGAGCCTGTTCCTCATCACCTCCACCAAGTGT
GACAAGGTGATCATCGAGGACGGCAAGGCTGTGGCCGTGAGAACAGTGCCAATGAAGCCTCTGAACCCTAAGAAGC
CTGTGTCCAGAACCTTCAGAGCCAGAAAGCAGATTGTGATCTCCTGCGGAACCATCTCGTCTCCTCTGGTGCTCCA
GAGATCTGGTATTGGTGCAGCTCACCACTTGAGATCCGTGGGGGTCAAGCCAATCGTCGACCTGCCAGGTGTGGGT
GAGAATTTCCAGGACCACTACTGTTTCTTCACTCCATACTACGTCAAGCCTGACGTTCCTACGTTCGACGACTTTG
TCAGGGGTGACCCAGTTGCCCAGAAGGCCGCTTTCGACCAGTGGTACTCCAACAAGGACGGTCCATTGACCACCAA
CGGTATTGAAGCCGGAGTCAAGATCAGACCTACCGAAGAGGAGCTGGCTACCGCGGACGAGGACTTCAGACGCGGC
TACGCAGAGTACTTCGAGAACAAGCCAGACAAGCCTCTGATGCACTACTCTGTCATCTCCGGCTTCTTTGGAGACC
ACACCAAGATTCCTAACGGCAAGTTCATGACCATGTTCCACTTCCTGGAGTATCCATTCTCCAGAGGATTTGTTAG
AATCACCTCGGCAAACCCATACGACGCTCCTGACTTCGATCCCGGCTTCCTCAATGACGAAAGAGACCTGTGGCCT
ATGGTCTGGGCATACAAGAAGTCCAGAGAGACGGCCAGAAGAATGGAGAGCTTTGCAGGAGAGGTCACCTCGCACC
ACCCATTGTTCAAGGTTGACTCGCCAGCCAGAGCCAGAGACCTGGACCTCGAGACATGCAGTGCATATGCCGGTCC
TAAGCACCTCACTGCCAACCTGTACCACGGCTCGTGGACCGTTCCTATCGACAAGCCAACGCCTAAGAACGATTTC
CACGTGACCTCCAACCAAGTCCAACTGCACTCCGACATCGAGTACACCGAGGAGGACGACGAGGCCATCGTCAACT
ACATTAAGGAACACACCGAGACCACTTGGCACTGTCTGGGTACCTGCTCGATGGCCCCAAGAGAGGGTAGTAAGAT
TGCTCCTAAGGGAGGTGTCTTGGACGCCAGACTGAACGTTTACGGAGTCCAGAACCTCAAGGTTGCGGACCTTTCT
GTTTGTCCCGACAACGTTGGATGCAACACCTACTCTACTGCATTGACCATCGGTGAGAAGGCTGCCACTCTTGTTG
CTGAAGATCTTGGCTACTCAGGCTCCGACCTGGACATGACGATTCCAAACTTCAGACTCGGAACTTACGAGGAGAC
CGGACTTGCCAGATTCTAA

Figure 1 (continued):

SEQ ID NO:21: pMOX promoter sequence of Ogataea polymorpha NCYC 495 leu 1.1
GCTGCAGCTTGCGATCTCGGATGGTTTTGGAATGGAAGAACCGCGACATCTCCAACAGCTGGGCCGTGTTGAGAAT
GAGCCGGACGTCGTTGAACGAGGGGGCCACAAGCCGGCGTTTGCTGATGGCGCGGCGCTCGTCCTCGATGTAGAAG
GCCTTTTCCAGAGGCAGTCTCGTGAAGAAGTTGCCAACGCTCGGAACCAGCTGCACGAGCCGAGACAATTCGGGGG
TGCCGGCTTTGGTCATTTCAATGTTGTCGTCGATGAGGAGTTCAAGGTCGTGGAAGATTTCCGCGTAGCGGCGTTT
TGCCTCAGAGTTTACCATGAGGTCGTCCACTGCAGAGATGCCGTTGCTCTTCACCGCGTACAGGACGAACGGCGTG
GCCAGCAGGCCCTTGATCCATTCTATGAGGCCATCTCGACGGTGTTCCTTGAGTGCGTACTCCACTCTGTAGCGAC
TGGACATCTCGAGACTGGGCTTGCTGTGCTGGATGCACCAATTAATTGTTGCCGCATGCATCCTTGCACCGCAAGT
TTTTAAAACCCACTCGCTTTAGCCGTCGCGTAAAACTTGTGAATCTGGCAACTGAGGGGGTTCTGCAGCCGCAACC
GAACTTTTCGCTTCGAGGACGCAGCTGGATGGTGTCATGTGAGGCTCTGTTTGCTGGCGTAGCCTACAACGTGACC
TTGCCTAACCGGACGGCGCTACCCACTGCTGTCTGTGCCTGCTACCAGAAAATCACCAGAGCAGCAGAGGGCCGAT
GTGGCAACTGGTGGGGTGTCGGACAGGCTGTTTCTCCACAGTGCAAATGCGGGTGAACCGGCCAGAAAGTAAATTC
TTATGCTACCGTGCAGTGACTCCGACATCCCCAGTTTTTGCCCTACTTGATCACAGATGGGGTCAGCGCTGCCGCT
AAGTGTACCCAACCGTCCCCACACGGTCCATCTATAAATACTGCTGCCAGTGCACGGTGGTGACATCAATCTAAAG
TACAAAAACAAA

Signal sequence (SEQ ID NO:22):

MK**X**STNLILAIAAAS**X**VVSA, wherein
X at position 3 is either F or L; and
X at position 16 is either A or T.

Leader sequence (SEQ ID NO:23):

MK**X**STNLILAIAAAS**X**VVSAAPVAPAEEAANHLHKR, wherein
X at position 3 is either F or L
X at position 16 is either A or T

Signal sequence, aMF, *S. cerevisiae* (SEQ ID NO:24):

MRFPSIFTAVLFAASSALAAPVNTTTEDETAQIPAEAVIGYSDLEGDFDVAVLPFSNSTNNGLLFINTTIASIAAK
EEGVSLEKR.

SEQ ID NO:50: ADH2 amino acid sequence of *Komagataella phaffii*, CBS7435
MSPTIPTTQKAVIFETNGGPLEYKDIPVPKPKSNELLINVKYSGVCHTDLHAWKGDWPLDNKLPLVGGHEGAGVVV
AYGENVTGWEIGDYAGIKWLNGSCLNCEYCIQGAESSCAKADLSGFTHDGSFQQYATADATQAARIPKEADLAEVA
PILCAGITVYKALKTADLRIGQWVAISGAGGGLGSLAVQYAKALGLRVLGIDGGADKGEFVKSLGAEVFVDFTKTK
DVVAEVQKLTNGGPHGVINVSVSPHAINQSVQYVRTLGKVVLVGLPSGAVVNSDVFWHVLKSIEIKGSYVGNREDS
AEAIDLFTRGLVKAPIKIIGLSELAKVYEQMEAGAIIGRYVVDTSK

SEQ ID NO:51: *ADH2* gene sequence of *Komagataella phaffii*, CBS7435
ATGTCTCCAACTATCCCAACTACACAAAAGGCTGTTATCTTCGAGACCAACGGCGGTCCCCTAGAGTACAAGGACA
TTCCAGTCCCAAAGCCAAAGTCAAACGAACTTTTGATCAACGTTAAGTACTCCGGTGTCTGTCACACTGATTTGCA
CGCCTGGAAGGGTGACTGGCCATTGGACAACAAGCTTCCTTTGGTTGGTGGTCACGAAGGTGCTGGTGTCGTTGTC
GCTTACGGTGAGAACGTCACTGGATGGGAGATCGGTGACTACGCTGGTATCAAATGGTTGAACGGTTCTTGTTTGA
ACTGTGAGTACTGTATCCAAGGTGCTGAATCCAGTTGTGCCAAGGCTGACCTGTCTGGTTTCACCCACGACGGATC
TTTCCAGCAGTATGCTACTGCTGATGCCACCCAAGCCGCCAGAATTCCAAAGGAGGCTGACTTGGCTGAAGTTGCC
CCAATTCTGTGTGCTGGTATCACCGTTTACAAGGCTCTTAAGACCGCTGACTTGCGTATTGGCCAATGGGTTGCCA
TTTCTGGTGCTGGTGGAGGACTGGGTTCTCTTGCCGTTCAATACGCCAAGGCTCTGGGTTTGAGAGTTTTGGGTAT
TGATGGTGGTGCCGACAAGGGTGAATTTGTCAAGTCCTTGGGTGCTGAGGTCTTCGTCGACTTCACTAAGACTAAG
GACGTCGTTGCTGAAGTCCAAAAGCTCACCAACGGTGGTCCACACGGTGTTATTAACGTCTCCGTTTCCCCACATG
CTATCAACCAATCTGTCCAATACGTTAGAACTTTGGGTAAGGTTGTTTTGGTTGGTCTGCCATCTGGTGCCGTTGT
CAACTCTGACGTTTTCTGGCACGTTCTGAAGTCCATCGAGATCAAGGGATCTTACGTTGGAAACAGAGAGGACAGT
GCCGAGGCCATCGACTTGTTCACCAGAGGTTTGGTCAAGGCTCCTATCAAGATTATCGGTCTGTCTGAACTTGCTA
AGGTCTACGAACAGATGGAGGCTGGTGCCATCATCGGTAGATACGTTGTGGACACTTCCAAATAA

Figure 1 (continued):

SEQ ID NO:52: ADH2 amino acid sequence of *Komagataella pastoris*, ATCC 28485
MSPTIPSTQKAVVFETNGGPLEYKDIPVPKPKSNEILINVKYSGVCHTDLHAWKGDWPLDNKLPLVGGHEGAGVVV
ALGENVTGWNIGDYAGIKWLNGSCLNCEYCIQGAESSCAKADLSGFTHDGSFQQYATADATQAARIPKEVDLAEVA
PILCAGITVYKALKTADLRIGQWVAISGAGGGLGSLAVQYAKALGLRVLGIDGGADKGEFVKSLGAEVYVDFTKTK
DVVAEVQKATNGGPHGVINVSVSPHAINQSVQYARTLGKIVLVGLPSGAVVNSDVFWHVLKSIEIKGSYVGNREDS
AEAIDLFARGLVKAPIKIIGLSELAKVYEQMEAGAIIGRYVVDTSK

SEQ ID NO:53: *ADH2* gene sequence of *Komagataella pastoris*, ATCC 28485
ATGTCTCCAACTATCCCATCTACACAAAAGGCTGTTGTCTTCGAGACCAACGGCGGTCCTCTCGAGTACAAGGACA
TCCCTGTCCCAAAGCCAAAGTCCAACGAAATCTTGATCAACGTTAAGTACTCCGGTGTCTGTCACACTGACTTGCA
CGCCTGGAAGGGTGACTGGCCATTGGACAACAAGCTTCCTTTGGTCGGTGGTCACGAAGGTGCTGGTGTCGTTGTC
GCTTTAGGTGAGAACGTCACTGGATGGAACATCGGTGACTACGCTGGTATCAAATGGTTGAACGGTTCTTGTTTGA
ACTGTGAGTACTGTATCCAAGGTGCTGAATCCAGTTGTGCCAAGGCTGACCTGTCTGGTTTCACCCACGACGGATC
TTTCCAGCAGTATGCTACTGCTGATGCCACCCAAGCCGCCAGAATTCCAAAGGAAGTTGACTTGGCTGAAGTTGCC
CCAATTTTGTGTGCTGGTATCACCGTTTACAAGGCTCTTAAGACCGCTGACTTGCGTATCGGCCAATGGGTTGCCA
TTTCCGGTGCTGGTGGAGGATTAGGTTCTCTTGCCGTTCAATACGCCAAGGCTCTGGGTTTGAGAGTTTTGGGTAT
TGATGGTGGTGCCGACAAGGGTGAGTTCGTCAAGTCCTTGGGTGCTGAGGTCTACGTCGACTTCACTAAGACTAAG
GACGTCGTTGCTGAGGTCCAAAAGGCCACCAACGGTGGTCCACACGGTGTTATCAACGTCTCCGTTTCCCCACATG
CTATCAACCAATCTGTCCAATACGCTAGAACTTTGGGTAAGATTGTTTTGGTTGGTCTGCCATCTGGTGCCGTTGT
CAACTCTGACGTTTTCTGGCACGTTCTGAAGTCCATCGAGATCAAGGGATCTTACGTTGGAAACAGAGAGGACAGT
GCCGAAGCCATCGACTTGTTCGCTAGAGGCTTAGTCAAGGCTCCTATTAAGATTATTGGTCTGTCCGAACTTGCTA
AGGTCTACGAGCAGATGGAGGCTGGTGCCATCATCGGTAGATACGTTGTGGACACTTCCAAATAA

SEQ ID NO:54: ADH2 amino acid sequence of *Ogataea parapolymorpha*, DL-1
MTSIPKTQKAVVFETNGGPLLYKDIPVPQPKPNEILVNVKYSGVCHTDLHAWKGDWPLDTKLPLVGGHEGAGVVVA
KGANVTNFEIGDYAGIKWLNGSCMGCEFCQQGAEPNCPEADLSGYTHDGSFQQYATADAVQAAKIPKGTNLADVAP
ILCAGVTVYKALKTAELSPGQWVAISGAGGGLGSLAVQYAVAMGLRVLGIDGGDEKAKLFESLGGEVFIDFTKEKD
IVGAVQKATNGGPHGVINVSVSPAAISQSCQYVRTLGKVVLVGLPAGAVCESPVFEHVIKSIQIRGSYVGNRQDTA
ESIDFFVRGKVKAPIKVVGLSELPKVFELMEQGKIAGRYVLDTSK

SEQ ID NO:55: *ADH2* gene sequence of *Ogataea parapolymorpha*, DL-1
ATGACTTCCATTCCAAAGACTCAAAAGGCCGTTGTTTTCGAGACCAACGGTGGTCCTCTTCTCTACAAGGACATCC
CTGTTCCACAACCAAAGCCAAATGAGATTCTTGTCAACGTCAAGTACTCCGGTGTTTGCCACACCGATCTCCACGC
TTGGAAGGGTGACTGGCCATTGGACACCAAACTTCCACTGGTCGGTGGTCACGAGGGTGCTGGTGTTGTTGTTGCT
AAGGGTGCCAACGTTACCAACTTTGAAATCGGTGACTACGCTGGTATCAAATGGTTGAACGGCTCGTGCATGGGTT
GTGAGTTCTGTCAACAAGGTGCAGAGCCAAACTGTCCTGAGGCCGACCTTTCCGGTTACACGCACGACGGTTCTTT
CCAACAATACGCCACTGCTGATGCTGTCCAGGCTGCCAAGATTCCAAAGGGAACTAACCTGGCTGACGTTGCTCCA
ATTCTCTGTGCTGGTGTCACTGTGTACAAGGCATTGAAGACTGCCGAATTGAGCCCAGGCCAATGGGTTGCTATCT
CTGGTGCTGGTGGAGGATTGGGTTCTCTTGCCGTTCAATACGCTGTCGCCATGGGCCTGAGAGTCCTGGGTATCGA
TGGTGGTGACGAAAAGGCTAAGCTCTTCGAGAGCTTGGGCGGAGAAGTCTTCATCGATTTCACCAAGGAAAAGGAC
ATTGTCGGAGCCGTCCAGAAGGCAACCAACGGTGGTCCACACGGTGTTATCAACGTTTCTGTGTCTCCAGCAGCTA
TCTCTCAATCCTGCCAATACGTGAGAACTCTTGGTAAGGTTGTTCTTGTTGGTCTTCCAGCCGGTGCTGTTTGCGA
GTCTCCAGTTTTCGAGCACGTTATCAAGTCTATCCAGATTAGAGGTTCCTACGTTGGTAACAGACAGGACACTGCC
GAGTCGATTGACTTCTTCGTCAGAGGCAAGGTTAAGGCTCCAATCAAGGTTGTTGGCCTTTCTGAGCTGCCAAAGG
TGTTCGAGTTGATGGAGCAAGGAAAGATTGCTGGAAGATACGTTCTTGACACTTCCAAATAG

SEQ ID NO:56: ADH2 amino acid sequence of *Ogataea parapolymorpha*, DL-1
MMSISRVAALRNQFARLAKPAVVQQVFRHSTASAPTIPKTQMGCVFETNGGPIEYKEIPVPKPKPNEILVHVKYSG
VCHTDLHAWKGDWPLPVKLPLVGGHEGAGVVVAKGENVKNFEIGDLAGIKWLNGSCMGCEFCQQGAEPNCPDADLS
GYTHDGSFQQYATADAVQAAKLPPGTDLAAVAPILCAGVTVYKALKTAALRPGQIVAISGAAGGLGSLAVQYAVAM
GLRVLGIDGGEQKGEFIKKLGAEFYVDFTKEKDIVSAIQKITNGGPHGVINVSVSPAAISQSCQYVRTLGKVVLVG
LPAGAVCESPVFEHVVKSIQIKGSYVGNRQDTAEAVDFFTRGLVKSPFQIAGLSELPEVFKKMEEGKILGRYVLDT
SK

Figure 1 (continued):

SEQ ID NO:57: *ADH2* gene sequence of *Ogataea parapolymorpha*, DL-1
ATGATGTCTATTTCGAGAGTTGCTGCTTTGAGAAACCAATTTGCTCGGCTAGCCAAGCCCGCTGTTGTCCAGCAGG
TCTTCAGACACTCTACTGCCTCTGCTCCAACCATCCCAAAGACCCAGATGGGATGTGTTTTTGAAACCAACGGTGG
TCCAATTGAGTACAAGGAGATCCCTGTTCCAAAGCCAAAGCCTAACGAGATTTTGGTCCACGTCAAGTACTCTGGT
GTGTGCCACACTGACTTGCACGCCTGGAAGGGTGACTGGCCACTGCCTGTCAAACTCCCACTTGTGGGTGGTCACG
AGGGTGCCGGTGTTGTCGTTGCCAAGGGTGAGAACGTTAAAAACTTCGAGATCGGCGACTTGGCCGGTATCAAGTG
GCTGAACGGCTCGTGTATGGGTTGTGAGTTCTGTCAACAGGGTGCCGAACCAAACTGTCCAGACGCTGACCTGTCC
GGTTACACGCACGACGGTTCTTTCCAACAATACGCCACTGCTGACGCTGTCCAGGCCGCTAAGCTGCCTCCTGGAA
CTGACCTCGCTGCTGTTGCTCCTATTTTGTGTGCTGGTGTCACTGTTTACAAGGCCTTGAAGACTGCTGCTCTGCG
TCCAGGACAGATCGTTGCCATTTCCGGTGCCGCCGGTGGATTGGGTTCTCTTGCCGTTCAATACGCTGTCGCCATG
GGCCTGAGAGTTCTGGGTATTGACGGTGGTGAGCAAAAGGGCGAGTTCATCAAGAAGCTCGGTGCCGAATTCTACG
TCGACTTCACCAAGGAGAAGGACATTGTGTCTGCCATCCAGAAGATCACCAACGGCGGTCCACACGGTGTCATCAA
CGTTTCTGTCTCTCCAGCTGCTATCTCCCAGTCTTGTCAATACGTGAGAACCCTCGGTAAGGTTGTTCTGGTCGGT
CTTCCAGCCGGCGCTGTTTGCGAGTCTCCTGTCTTTGAGCACGTCGTCAAGTCCATCCAGATCAAGGGATCTTACG
TTGGTAACAGACAAGACACTGCCGAGGCCGTGGACTTCTTCACCAGAGGCCTTGTCAAGTCTCCATTCCAGATTGC
TGGTCTTTCCGAGCTGCCAGAGGTCTTCAAGAAGATGGAGGAGGGCAAGATCTTGGGCAGATACGTCCTTGACACT
TCTAAATAG

SEQ ID NO:58: ADH amino acid sequence of *Ogataea polymorpha*, NCYC 495 leu1.1
MPSIPKTQKAIVFETNGGPLLYKDIPVPQPKPNEILVNVKYSGVCHTDLHAWKGDWPLATKLPLVGGHEGAGVVVA
KGANVTNFEIGDYAGIKWLNGSCMGCEFCQQGAEPNCPDADLSGYTHDGSFQQYATADAVQAAKIPKGTNLADVAP
ILCAGVTVYKALKTAELSPGQWVAISGAGGGLGSLAVQYAVAMGLRVLGIDGGDEKAKLFESLGGEVFIDFTKEKD
IVGAVQKATNGGPHGVINVSVSPAAISQSCQYVRTLGKVVLVGLPAGAVCESPVFEHVIKSIQIRGSYVGNRQDTA
ESIDFFVRGKVKAPIKVVGLSELPKVFELMEQGKIAGRYVLDTSK

SEQ ID NO:59: *ADH* gene sequence of *Ogataea polymorpha*, NCYC 495 leu1.1
ATGCCTTCCATTCCAAAGACTCAAAAGGCCATTGTTTTCGAAACCAACGGTGGTCCTCTTCTATACAAGGACATCC
CTGTTCCACAGCCAAAGCCAAATGAAATCCTTGTCAACGTCAAGTACTCTGGTGTGTGCCACACCGACTTGCACGC
CTGGAAGGGTGACTGGCCATTGGCCACCAAACTTCCACTGGTCGGTGGTCACGAGGGTGCTGGTGTTGTTGTTGCC
AAGGGTGCCAACGTTACCAACTTTGAGATCGGCGACTACGCTGGTATCAAATGGCTGAACGGCTCGTGTATGGGTT
GTGAGTTCTGTCAACAAGGTGCAGAACCAAACTGTCCAGACGCCGACCTTTCCGGTTACACGCACGACGGTTCCTT
CCAACAATACGCCACTGCTGATGCTGTCCAGGCTGCCAAGATTCCAAAGGGAACTAACCTGGCCGATGTTGCTCCA
ATTCTCTGTGCTGGTGTCACTGTGTACAAGGCATTGAAGACTGCCGAATTGAGCCCAGGCCAGTGGGTCGCTATCT
CTGGTGCTGGTGGAGGATTGGGTTCTCTTGCCGTTCAATACGCTGTCGCTATGGGCCTGAGAGTTCTGGGTATCGA
TGGTGGTGACGAAAAGGCCAAGCTCTTCGAGAGCTTGGGCGGAGAAGTCTTCATCGATTTCACAAAGGAAAAGGAC
ATTGTCGGAGCCGTCCAGAAGGCTACCAACGGTGGTCCACACGGTGTCATCAACGTTTCCGTGTCTCCAGCAGCTA
TCTCTCAATCCTGCCAATACGTGAGAACTCTTGGTAAGGTTGTTCTTGTTGGTCTTCCAGCAGGTGCTGTTTGCGA
GTCTCCAGTTTTCGAGCACGTTATCAAGTCTATCCAGATTAGAGGTTCCTACGTTGGTAACAGACAGGACACTGCG
GAGTCGATCGACTTCTTCGTCAGAGGCAAGGTTAAGGCTCCAATCAAGGTTGTTGGTCTTTCTGAGCTGCCAAAAG
TGTTCGAGTTGATGGAGCAAGGAAAGATTGCAGGAAGATACGTCCTCGACACTTCCAAATAG

SEQ ID NO:60: ADH amino acid sequence *Ogataea polymorpha*, NCYC 495 leu1.1
MSISRVAALRNQFARLAKPAVVQQVFRHSTASAPTIPKTQMGCVFETNGGPIEYKEIPVPKPKPNEILVHVKYSGV
CHTDLHAWKGDWPLPVKLPLVGGHEGAGVVVAKGENVKNFEIGDLAGIKWLNGSCMGCEFCQQGAEPNCPDADLSG
YTHDGSFQQYATADAVQAAKLPPGTDLAAVAPILCAGVTVYKALKTAALRPGQIVAISGAAGGLGSLAVQYAVAMG
LRVLGIDGGEQKGEFIKKLGAEFYVDFTKEKDIVSAIQKVTNGGPHGVINVSVSPAAISQSCQYVRTLGKVVLVGL
PAGAVCESPVFEHVVKSIQIKGSYVGNRQDTAEAVDFFTRGLVRSPFQIAGLSELPEVFKKMEEGKILGRYVLDTS
K]

Figure 1 (continued):

SEQ ID NO:61: *ADH* gene sequence of *Ogataea polymorpha*, NCYC 495 leu1.1
ATGTCTATTTCGAGAGTTGCTGCATTGAGAAACCAATTTGCTCGTCTAGCCAAGCCGGCTGTAGTCCAGCAGGTCT
TCAGACACTCCACTGCCTCTGCTCCAACCATCCCAAAGACCCAGATGGGATGTGTTTTTGAAACCAACGGCGGTCC
AATTGAGTACAAGGAGATCCCAGTTCCAAAGCCAAAGCCAAACGAGATTCTGGTCCACGTCAAGTACTCTGGTGTG
TGCCACACCGACTTGCACGCCTGGAAGGGTGACTGGCCACTGCCTGTCAAACTCCCACTTGTGGGTGGTCACGAGG
GTGCCGGTGTTGTCGTTGCCAAGGGTGAGAACGTTAAAAACTTCGAGATCGGCGACTTGGCCGGTATCAAATGGCT
GAACGGCTCGTGTATGGGTTGTGAGTTCTGTCAACAGGGTGCCGAACCAAACTGTCCTGACGCCGACCTTTCCGGT
TACACACACGACGGTTCTTTCCAACAATACGCCACTGCTGACGCTGTCCAGGCCGCTAAGCTGCCTCCAGGAACTG
ACCTCGCTGCTGTTGCTCCAATTTTGTGTGCTGGTGTGACTGTTTACAAGGCCTTGAAGACTGCTGCTTTGCGTCC
AGGTCAGATTGTTGCTATTTCCGGTGCCGCCGGTGGATTGGGTTCTCTTGCCGTTCAATACGCTGTCGCCATGGGT
CTGAGAGTTCTGGGTATTGACGGTGGTGAGCAGAAGGGCGAGTTCATCAAGAAGCTCGGTGCCGAATTCTACGTCG
ACTTCACCAAGGAGAAGGACATTGTGTCTGCCATCCAGAAGGTCACCAATGGCGGTCCACACGGTGTCATCAACGT
GTCTGTGTCTCCAGCTGCTATCTCCCAGTCTTGTCAATACGTGAGAACCCTCGGTAAGGTTGTTCTGGTTGGTCTT
CCAGCCGGCGCTGTTTGCGAATCTCCTGTCTTTGAGCACGTCGTCAAGTCCATCCAGATCAAGGGATCTTATGTTG
GTAACAGACAAGACACTGCCGAGGCCGTGGACTTCTTCACCAGAGGCCTTGTCCGTTCTCCATTCCAAATTGCCGG
TCTTTCCGAGCTGCCTGAGGTCTTCAAGAAGATGGAGGAGGGCAAGATCTTGGGTAGATATGTCCTTGACACTTCT
AAATAA

SEQ ID NO:62: ADH2 amino acid sequence of *Saccharomyces cerevisiae*, YJM627
MSIPETQKAIIFYESNGKLEYKDIPVPKPKANELLINVKYSGVCHTDLHAWHGDWPLPVKLPLVGGHEGAGVVVGM
GENVKGWKIGDYAGIKWLNGSCMACEYCELGNESNCPHADLSGYTHDGSFQQYATADAVQAAHIPQGTDLAEVAPV
LCAGITVYKALKSANLRAGHWVAISGAAGGLGSLAVQYAKAMGYRVLGIDGGPGKEELFTSLGGEVFIDFTKEKDI
VSAVVKATNGGAHGIINVSVSEAAIEASTRYCRANGTVVLVGLPAGAKCSSDVFNHVVKSISIVGSYVGNRADTRE
ALDFFARGLVKSPIKVVGLSSLPEIYEKMEKGQIAGRYVVDTSK

SEQ ID NO:63: *ADH2* gene sequence of *Saccharomyces cerevisiae*, YJM627
ATGTCTATTCCAGAAACTCAAAAAGCCATTATCTTCTACGAGTCCAACGGTAAGTTGGAATACAAAGATATTCCAG
TTCCAAAGCCAAAGGCCAACGAATTGTTGATCAACGTTAAATACTCTGGTGTCTGTCACACTGACTTGCACGCTTG
GCACGGTGACTGGCCATTGCCAGTTAAGCTACCATTAGTCGGTGGTCACGAAGGTGCCGGTGTCGTTGTCGGCATG
GGTGAAAACGTTAAGGGCTGGAAGATCGGTGACTACGCCGGTATCAAATGGTTGAACGGTTCTTGTATGGCCTGTG
AATACTGTGAATTGGGTAACGAATCCAACTGTCCTCACGCTGACTTGTCTGGTTACACCCACGACGGTTCTTTCCA
ACAATACGCTACCGCTGACGCTGTTCAAGCCGCTCACATTCCTCAAGGTACTGACTTGGCTGAAGTCGCCCCAGTT
TTGTGTGCTGGTATCACCGTCTACAAGGCTTTGAAGTCTGCCAACTTGAGAGCAGGCCACTGGGTGGCCATTTCTG
GTGCTGCTGGTGGTCTAGGTTCTTTGGCTGTTCAATATGCTAAGGCGATGGGTTACAGAGTCTTAGGTATTGATGG
TGGTCCAGGAAAGGAAGAATTGTTTACCTCGCTCGGTGGTGAAGTATTCATCGACTTCACCAAAGAGAAGGACATT
GTTAGCGCAGTCGTTAAGGCTACCAACGGCGGTGCCCACGGTATCATCAATGTTTCCGTTTCCGAAGCCGCTATCG
AAGCTTCTACCAGATACTGTAGGGCGAACGGTACTGTTGTCTTGGTTGGTTTGCCAGCCGGTGCAAAGTGCTCCTC
TGATGTCTTCAACCACGTTGTCAAGTCTATCTCCATTGTCGGCTCTTACGTGGGGAACAGAGCTGATACCAGAGAA
GCCTTAGATTTCTTTGCCAGAGGTCTAGTCAAGTCTCCAATAAAGGTAGTTGGCTTATCCAGTTTACCAGAAATTT
ACGAAAAGATGGAGAAGGGCCAAATTGCTGGTAGATACGTTGTTGACACTTCTAAATAA

SEQ ID NO:64: ADH2 amino acid sequence of *Candida maltosa*, Xu316
MSSIPTTQKAIIFETNGGKLEYKDIPVPKPKPNELLINVKYSGVCHTDLHAWKGDWPLATKLPLVGGHEGAGVVVA
IGDNVKNWKVGDFAGVKWLNGSCLNCEYCQQGAEPNCAQADLSGYTHDGSFQQYATADAVQAARIPAGTDLATVAP
ILCAGVTVYKALKTANLQPGQWVAISGAAGGLGSLAVQYAKAMGYRVLAIDGGEDKGQFVKSLGAETFIDFTKEKD
VVGAVQKATNGGPHGVINVSVSDRAINQSVEYVRTLGKVVLVGLPAGAKVTAPVFDSVVKSIEIKGSYVGNRKDTA
EAVDFFSRGLIKCPIKIVGLSELPEVYKLMEEGKILGRYVLDTSK

Figure 1 (continued):

SEQ ID NO:65: *ADH2* gene sequence of *Candida maltosa*, Xu316
ATGTCTTCTATTCCAACTACTCAAAAAGCTATTATCTTCGAAACCAACGGCGGTAAATTAGAATACAAAGATATCC
CAGTCCCAAAACCAAAACCAAATGAATTGTTGATCAATGTTAAATACTCCGGTGTTTGTCACACTGATTTGCACGC
TTGGAAAGGTGATTGGCCATTAGCCACCAAATTACCATTGGTCGGTGGTCACGAAGGTGCTGGTGTTGTCGTTGCT
ATTGGTGACAATGTCAAGAACTGGAAAGTTGGTGATTTCGCCGGTGTCAAATGGTTGAATGGTTCTTGTTTGAACT
GTGAATACTGTCAACAAGGTGCTGAACCAAACTGTGCTCAAGCTGACTTGTCCGGTTACACCCACGATGGTTCTTT
CCAACAATACGCCACTGCCGATGCAGTTCAAGCGGCTAGAATTCCAGCTGGTACTGATTTAGCCACCGTTGCTCCA
ATCTTGTGTGCTGGTGTTACCGTTTACAAGGCTTTGAAGACTGCCAACTTACAACCAGGTCAATGGGTTGCCATTT
CCGGTGCCGCTGGTGGTTTAGGTTCTTTGGCTGTTCAATACGCTAAAGCTATGGGTTACAGAGTCTTGGCCATTGA
CGGTGGTGAAGATAAAGGTCAATTTGTTAAATCTTTGGGTGCTGAAACTTTTATCGATTTTACCAAAGAAAAGGAT
GTTGTTGGTGCTGTCCAAAAAGCTACCAACGGTGGTCCACATGGTGTCATTAACGTCTCTGTTTCCGACAGAGCTA
TCAACCAATCCGTTGAATACGTTAGAACTTTAGGTAAAGTTGTTTTGGTTGGTTTACCAGCTGGTGCTAAAGTCAC
TGCTCCAGTCTTTGACTCCGTCGTTAAATCCATTGAAATTAAAGGTTCTTATGTTGGTAACAGAAAAGACACTGCC
GAAGCCGTTGATTTCTTCTCTAGAGGTTTGATTAAATGTCCAATCAAGATTGTTGGTTTATCTGAATTACCAGAAG
TTTACAAATTGATGGAAGAAGGTAAAATCTTGGGTAGATACGTTTTGGACACCTCCAAATAA

SEQ ID NO:66: ADH4 amino acid sequence of *Kluyveromyces marxianus*, DMKU3-1042
MFRLARAQTSITTTSKALGGSRRLFVRLNSSFAIPESQKGVIFYENGGKLEYKDLPVPKPKPNEILINVKYSGVCH
TDLHAWKGDWPLPVKLPLVGGHEGAGVVVAKGENVTNFEIGDYAGIKWLNGSCMSCELCEQGYESNCLQADLSGYT
HDGSFQQYATADAVQAAQIPKGTDLAEIAPILCAGVTVYKALKTADLQPGQWIAISGAAGGLGSLAVQYAKAMGLR
VLGIDGGPGKEELFKSLGGEVFIDFTKSKDMVADIQEATNGGPHGVINVSVSEAAISMSTEYVRPTGVVVLVGLPA
HAYVKSEVFSHVVKSISIKGSYVGNRADTREAIDFFTRGLVKSPIKVVGLSELPKVYELMEAGKILGRYVVDTSK

SEQ ID NO:67: *ADH4* gene sequence of *Kluyveromyces marxianus*, DMKU3-1042
ATGTTCAGACTAGCACGCGCTCAGACCAGCATTACCACCACTAGCAAGGCTCTAGGTGGCTCCAGAAGACTATTCG
TCAGACTAAACTCCTCTTTCGCCATCCCAGAATCCCAAAAGGGTGTGATTTTCTACGAAAACGGCGGTAAGTTGGA
ATACAAGGACCTTCCAGTTCCAAAGCCAAAGCCAAATGAAATCTTGATCAACGTCAAGTACTCCGGTGTGTGTCAC
ACTGATTTGCACGCCTGGAAGGGTGACTGGCCATTGCCAGTTAAGTTGCCTTTGGTCGGTGGTCACGAAGGTGCCG
GTGTCGTCGTTGCCAAGGGTGAAAACGTTACCAACTTCGAGATCGGTGACTACGCAGGTATCAAGTGGTTGAACGG
TTCTTGTATGTCTTGTGAACTCTGTGAACAAGGTTACGAATCCAACTGTTTGCAAGCTGACTTGTCTGGTTACACC
CACGACGGTTCCTTCCAACAATATGCCACTGCTGACGCTGTTCAAGCTGCCCAAATTCCAAAGGGTACCGATTTGG
CTGAAATCGCCCCAATCTTGTGTGCCGGTGTCACCGTCTACAAGGCTCTAAAGACCGCTGACTTGCAACCAGGTCA
ATGGATCGCTATCTCCGGTGCTGCCGGTGGTCTTGGTTCCCTAGCCGTGCAATACGCCAAGGCAATGGGTCTAAGA
GTTCTAGGTATCGACGGTGGTCCAGGTAAGGAAGAATTGTTCAAGAGCTTGGGTGGTGAAGTCTTCATTGACTTCA
CAAAGTCCAAGGACATGGTCGCAGACATCCAGGAAGCCACCAACGGTGGTCCTCACGGTGTGATCAACGTCTCCGT
CTCCGAGGCCGCTATCTCCATGTCCACCGAGTACGTCAGACCAACCGGTGTGGTCGTTCTAGTCGGTTTGCCAGCC
CACGCTTACGTCAAGTCCGAAGTCTTCTCCCACGTCGTCAAGTCTATCTCTATTAAGGGTTCTTACGTCGGTAACA
GAGCAGACACCAGAGAAGCTATTGACTTCTTCACCAGAGGTTTGGTCAAGTCTCCAATCAAGGTTGTTGGTTTGTC
TGAATTGCCAAAGGTTTATGAATTGATGGAAGCTGGTAAGATCTTGGGTAGATACGTCGTTGACACTTCCAAATAA

SEQ ID NO:68: ADH1 amino acid sequence of *Escherichia coli*, 7.1982
MSEQIPKTQKAVVFDTNGGQLVYKDYPVPTPKPNELLINVKYSGVCHTDLHAWKGDWPLATKLPLVGGHEGAGVVV
GMGENVKGWKIGDFAGIKWLNGSCMSCEFCQQGAEPNCGEADLSGYTHDGSFEQYATADAVQAAKIPAGTDLANVA
PILCAGVTVYKALKTADLAAGQWVAISGAGGGLGSLAVQYARAMGLRVVAIDGGDEKGEFVKSLGAEAYVDFTKDK
DIVEAVKKATDGGPHGAINVSVSEKAIDQSVEYVRPLGKVVLVGLPAHAKVTAPVFDAVVKSIEIKGSYVGNRKDT
AEAIDFFSRGLIKCPIKIVGLSDLPEVFKLMEEGKILGRYVLDTSK

Figure 1 (continued):

SEQ ID NO:69: *ADH1* gene sequence of *Escherichia coli*, 7.1982

ATGTCTGAACAAATCCCAAAAACTCAAAAAGCCGTTGTCTTTGATACCAATGGTGGTCAATTAGTCTACAAGGATT
ACCCAGTTCCAACTCCAAAGCCAAATGAATTGTTAATCAACGTCAAATACTCTGGTGTCTGTCACACTGATTTACA
CGCTTGGAAAGGTGACTGGCCATTGGCTACTAAATTGCCATTAGTTGGTGGTCACGAAGGTGCCGGTGTCGTTGTC
GGTATGGGTGAAAACGTCAAAGGATGGAAAATCGGTGACTTTGCCGGTATCAAATGGTTGAACGGTTCTTGTATGA
GTTGTGAATTCTGTCAACAAGGTGCTGAACCAAACTGTGGTGAAGCTGACTTGTCTGGTTACACTCACGATGGTTC
ATTCGAACAATACGCTACTGCTGATGCTGTCCAAGCCGCTAAAATTCCAGCTGGTACTGATTTAGCCAATGTCGCA
CCAATCTTATGTGCTGGTGTTACTGTTTACAAAGCCTTAAAGACTGCTGACTTAGCAGCTGGCCAATGGGTTGCTA
TCTCCGGTGCTGGTGGTGGTTTAGGTTCTTTGGCCGTTCAATACGCCAGAGCCATGGGTTTGAGAGTTGTTGCTAT
TGACGGTGGTGACGAAAAAGGTGAATTTGTTAAATCATTGGGTGCTGAAGCTTACGTTGATTTCACCAAAGATAAA
GATATTGTTGAAGCTGTTAAGAAGGCTACTGATGGTGGTCCACACGGTGCTATCAATGTCTCTGTTTCTGAAAAAG
CCATTGACCAATCTGTTGAATATGTTAGACCATTAGGTAAAGTTGTTTTGGTTGGTTTACCAGCTCACGCTAAAGT
CACTGCTCCAGTTTTCGATGCTGTTGTCAAATCCATTGAAATCAAAGGTTCTTACGTTGGTAACAGAAAAGATACT
GCTGAAGCTATTGACTTCTTCTCCAGAGGTTTAATCAAATGCCCAATCAAGATTGTCGGTTTATCTGACTTGCCAG
AAGTCTTCAAATTGATGGAAGAAGGTAAAATCTTGGGTAGATACGTCTTGGACACCAGTAAATAA

SEQ ID NO:70: ADH1 amino acid sequence of *Fusarium graminearum*, PH-1

MAAPQIPSQQWAQIFEKTAGPIEYKQIPVQKPGPDEVLVNVKFSGVCHTDLHAWQGDWPLDTKLPLVGGHEGAGVV
VARGELVKDVKIGEKVGIKWLNGSCLSCSYCQNADESLCAEALLSGYTVDGSFQQYAIAKAIHVARIPEECDLEAI
SPILCAGITVYKGIKESGVKAGQSLAIVGAGGGLGSIAVQYAKAMGIHAIAIDGGEEKEKMCMSLGAQTFIDFTKT
KNIVADVKATTNDGLGPHAALLVAAAEKPFQQATQYIRSKGTVVCIGLPAGAQFSAPVFDTVVRMIQIKGSYVGNR
ADTAEAIDFFRRGLIKVPFKTVGLSELNEVFKLMKAGQVAGRYVVDTSR

SEQ ID NO:71: *ADH1* gene sequence of *Fusarium graminearum*, PH-1

ATGGCCGCTCCCCAGATTCCTTCCCAGCAGTGGGCTCAGATCTTCGAGAAGACCGCCGGTCCCATCGAGTACAAGC
AGATTCCCGTCCAGAAGCCTGGCCCCGATGAGGTTCTCGTCAACGTCAAGTTCTCCGGTGTCTGCCACACTGACCT
CCACGCCTGGCAGGGTGACTGGCCCCTCGACACCAAGCTGCCCCTTGTCGGTGGCCACGAGGGTGCCGGTGTTGTC
GTTGCCCGCGGCGAGCTTGTCAAGGATGTCAAGATTGGCGAGAAGGTCGGTATCAAGTGGCTCAACGGTTCTTGCT
TGAGCTGCTCTTACTGCCAAAACGCCGATGAGTCTCTCTGCGCTGAGGCTCTTCTCTCCGGTTACACCGTCGATGG
ATCTTTCCAGCAATACGCCATCGCCAAGGCTATCCACGTTGCTCGCATCCCTGAGGAGTGTGACCTTGAGGCCATC
TCCCCCATTCTCTGCGCCGGTATCACCGTCTACAAGGGTATCAAGGAGTCCGGTGTCAAGGCCGGCCAGTCTCTTG
CTATCGTCGGTGCTGGTGGTGGTCTCGGTTCCATCGCTGTTCAGTACGCCAAGGCTATGGGTATCCATGCCATTGC
CATTGATGGTGGTGAGGAGAAGGAGAAGATGTGCATGTCTCTCGGTGCCCAAACCTTCATCGACTTCACAAAGACT
AAGAACATCGTCGCTGATGTCAAGGCTACTACCAACGATGGCCTTGGCCCTCACGCTGCTCTCCTCGTCGCTGCTG
CCGAGAAGCCCTTCCAACAGGCTACCCAATACATCCGATCCAAGGGTACCGTCGTCTGCATCGGTCTCCCCGCTGG
TGCTCAGTTCTCTGCCCCCGTCTTCGACACTGTCGTTCGCATGATTCAGATCAAGGGATCTTATGTCGGTAACCGT
GCCGATACTGCTGAGGCCATCGACTTCTTCCGCCGTGGTCTCATCAAGGTTCCCTTCAAGACTGTTGGTCTCTCTG
AGCTCAACGAGGTCTTCAAGCTCATGAAGGCTGGCCAAGTTGCTGGTCGCTATGTCGTTGACACCAGCCGATAA