

## FREP A

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          510      520      530      540      550      560      570      580      590      600
FREP_A_Locus_1043_Tr_1
PCR sequence from FREP_A
CCTCCACGGAAGAATACGTCTCGACTGTTTCAGCTTACAAAGGAGCTGGATCAGAGCCAGGCAAAGCTGAATGCGGCTTATGCTGCTGGAAACAAGAC
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                                     *****
          610      620      630      640      650      660      670      680      690      700
FREP_A_Locus_1043_Tr_1
PCR sequence from FREP_A
ACAGTCGGAGCTCGTGGAAACCCAGACAAGACTTTCTAGACGTCAGTTACCAGACGACTGCATCCCTGTTGTTTCCAACGGACAGGATGCGATGACCCC
-----
CTTTCTAGACGTCAGTTACCAGACGACTGCATCCCTGTTGTTTCCAACGGACAGGATGCGATGACCCC
          710      720      730      740      750      760      770      780      790      800
FREP_A_Locus_1043_Tr_1
PCR sequence from FREP_A
AAGTTGACCGTCGGCTACCACATCCTGAAATCGTCCCAAAGACGGGCTGGGTCCCATCAAAGTTTATGCCACGTTCCGATCCAAGGTGAAGGCTGGA
AAGTTGACCGTCGGCTACCACATCCTGAAATCGTCCCAAAGACGGGCTGGGTCCCATCAAAGTTTATGCCACGTTCCGATCCAAGGTGAAGGCTGGA
          810      820      830      840      850      860      870      880      890      900
FREP_A_Locus_1043_Tr_1
PCR sequence from FREP_A
TCGTGTTCCAGAAGAGATTTCGACGGCTCTGTCGACTTCTACAGAAATTTCCGCGATTACGAAGTCGGGTTCCGGCACAGTTAGTCCGACCACAGAGTTCTG
TCGTGTTCCAGAAGAGATTTCGACGGCTCTGTCGACTTCTACAGAAATTTCCGCGATTACGAAGTCGGGTTCCGGCACAGTTAGTCCGACCACAGAGTTCTG
          910      920      930      940      950      960      970      980      990      1000
FREP_A_Locus_1043_Tr_1
PCR sequence from FREP_A
GCTGGGTTTGGAGAACCCTCAGACGCTCCTTGTTGACAACGCTGACGAGAACGGGCTTCGCGTGGACATGACAGAAAGAGGCACTGCCTTCAACTTCACC
GCTGGGTTTGGAGAACCCTCAGACGCTCCTTGTTGACAACGCTGACGAGAACGGGCTTCGCGTGGACATGACAGAAAGAGGCACTGCCTTCAACTTCACC
          1010     1020     1030     1040     1050     1060     1070     1080     1090     1100
FREP_A_Locus_1043_Tr_1
PCR sequence from FREP_A
AGAATATACCCCATTTTCCGAGTAGGTCCAGGAGACGGCTACACCCTGATCGCTGACGGATACAGCGACGGAGGCAAGGGTCTGTCCGAGAACTCTGGCG
AGAATATACCCCATTTTCCGAGTAGGTCCAGGAGACGGCTACACCCTGATCGCTGACGGATACAGCGACGGAGGCAAGGGTCTGTCCGAGAACTCTGGCG
          1110     1120     1130     1140     1150     1160     1170     1180     1190     1200
FREP_A_Locus_1043_Tr_1
PCR sequence from FREP_A
CCAAGTTCTCCACCTACGACAACGATCACTCCCTTGGGTGCCCTTCAAGTCTGCGTCTCCTGCTGGTGGTGGTCCACGAAGGCTGTGGCTTCTGCAACTC
CCAAGTTCTCCACCTACGACAACGATCACTCCCTTGGGTGCCCTTCAAGTCTGCGTCTCCT-----
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## FREP D-as1

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          310      320      330      340      350      360      370      380      390      400
FREP_D-as1_Locus_15883_Tr_6
PCR sequence from FREP_D-as-1
TGCCCATGGGAAAATCTATACAAAGACTTGAAGACTCTTACCTTCAAGTAATTTGGAAGAAATCCGAAGATCTCCGAGTCTGGAAAATATTTCTGCCTA
-----
                                     *****
          410      420      430      440      450      460      470      480      490      500
FREP_D-as1_Locus_15883_Tr_6
PCR sequence from FREP_D-as-1
GCATACGCCAAGAATTCTACTGGCCAAGATAGTGTGTTCAATCCACAGTAACAATAAAAGTTTTAAACCAAAGGCGGATGATTTGGTCCAGGTGTTAG
-----
AGAATTCTACTGGCCAAGATAGTGTGTTTCAATCCACAGTAACAATAAAAGTTTTAAACCAAAGGCGGATGATTTGGTCCAGGTGTTAG
          510      520      530      540      550      560      570      580      590      600
FREP_D-as1_Locus_15883_Tr_6
PCR sequence from FREP_D-as-1
GCCAGCTACTTAAAGAGTAGATACACTTGAACCAACTACTGAAAGGAAACGAAACAAATTTTGGAGGTGTGACAGCAGACGACATATTGATTTCAACAC
GCCAGCTACTTAAAGAGTAGATACACTTGAACNNCTACTGAAAGGAAACGAAACAAATTTTGGAGGTGTGACAGCAGACGACATATTGATTTCAACAC

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610 620 630 640 650 660 670 680 690 700  
.....|.....|.....|.....|.....|.....|.....|.....|.....|.....|.....|  
FREP\_D-as1\_Locus\_15883\_Tr\_6 **CCATAAAACACCGTTCACTTCCCTGTCGTGACGTCAACAGCTCAGATGAACGCCTGGTGGTACTTTAGCTTCAGAGCAAAGGTCATGTGTGACACAAG**  
PCR sequence from FREP\_D-as-1 **CCATAAAACACCGTTCACTTCCCTGTCGTGACGTCAACAGCTCAGATGAACGCCTGGTGGTACTTTAGCTTCAGAGCAAAGGTCATGTGTGACACAAG**

710 720 730 740 750 760 770 780 790 800  
.....|.....|.....|.....|.....|.....|.....|.....|.....|.....|.....|  
FREP\_D-as1\_Locus\_15883\_Tr\_6 **ACAGACGGCGGTTGGATGGATCATCTTTCAAGAGAAGAAATTATGGGATATGTTGATTTCACAGAGGCTGGAAGGAGTATCGTGACGGCTTTGGTGATTACG**  
PCR sequence from FREP\_D-as-1 **ACAGATGGCGGCGGTTGGATTATCATCAA-----**  
\*\*\*\*\*

810 820  
.....|.....|.....|.....|.....|.....|  
FREP\_D-as1\_Locus\_15883\_Tr\_6 **ACATTGGTGAATTTTATCTGGGAAAT**  
PCR sequence from FREP\_D-as-1 -----  
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**FREP I2**

510 520 530 540 550 560 570 580 590 600  
.....|.....|.....|.....|.....|.....|.....|.....|.....|.....|.....|  
FREP\_I2\_Locus\_3534\_Tr\_70 **GTTAAACAATAGAAAGTTATAAGTCCAACAATTGATGATTTGATGGAAGTAATCCAAAAATTAGTTACACAGGTTGATGGAGACAAGGAAAGCCTGCAAGAT**  
PCR sequence from FREP I2 -----  
\*\*\*\*\*  
AAAGCCTGCAAGAT

610 620 630 640 650 660 670 680 690 700  
.....|.....|.....|.....|.....|.....|.....|.....|.....|.....|.....|  
FREP\_I2\_Locus\_3534\_Tr\_70 **GTTAAACAAAATATAAAGAACATTAAAGAAGACTTAAACAATAAAGAACAATAATATTAGCATTAAAGAGGATTTGAATACTAAAACAACAAGTATCA**  
PCR sequence from FREP I2 **GTTAAACAAAATATAAAGAACATCAAAGAAGACTTGGATTTCAAAGAACAATAATATTAGCATTAAAGAGGATTTGATTACAATCAACATAGTATCA**

710 720 730 740 750 760 770 780 790 800  
.....|.....|.....|.....|.....|.....|.....|.....|.....|.....|.....|  
FREP\_I2\_Locus\_3534\_Tr\_70 **TAAAGCATTAAAGAAGATTTCAAAACATAAACAAGAACTATTCAAAGAAGAGCTGACTATAAATCAACAAAATATACAGAAAATTAAGAAGAAATGGATTTC**  
PCR sequence from FREP I2 **TAAATCCTTAATGAAGACTTCAAAATTAACAAGAACTATTCAAAGAAGAGCTGACTATAAATCAACAAAATATACAGAAAATTAAGAAGAAATGGATTTC**

810 820 830 840 850 860 870 880 890 900  
.....|.....|.....|.....|.....|.....|.....|.....|.....|.....|.....|  
FREP\_I2\_Locus\_3534\_Tr\_70 **TAAAGAACAAGCATGATAAGGATTAGAGAAGACTTCAGCGCGTGTCAACAGAATATAAGCGCATTAAAGAAAATCTCGAAATAATGTTTGTAAATCTT**  
PCR sequence from FREP I2 **TAAAGAACAAGCATGATAAGGATTAGAGAAGACTTCAGCGCGTGTCAACAGAATATAAGCGCATTAAAGAAAATCTCGAAATAATGTTTGTAAATCTT**

910 920 930 940 950 960 970 980 990 1000  
.....|.....|.....|.....|.....|.....|.....|.....|.....|.....|.....|  
FREP\_I2\_Locus\_3534\_Tr\_70 **TCAACTTCTTTTCATGCAAGTGAACACACAATAAATAAGGAAACCAAGAAGACCAACATTTAATACCCCAAGATTGTGCGGCACGTCAACAGTACCG**  
PCR sequence from FREP I2 **TCAACTTCTTTTCATGCAAGTGAATACACAATAAATAAGGAAACCAAGAAGACCAACATTTAATACCCCAAGATTGTGCGGCACGTCAACAGTACCG**

1010 1020 1030 1040 1050 1060  
.....|.....|.....|.....|.....|.....|  
FREP\_I2\_Locus\_3534\_Tr\_70 **ACGAGCGTGTGGTGAACATTAACCTCCGGGTTAAAGGTCATGTGTGACACCAAGACAG**  
PCR sequence from FREP I2 **A-----**  
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### FREP K3

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510 520 530 540 550 560 570 580 590 600
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FREP_K3_Locus_3534_Tr_154 TCTGAGGTC AATCAAAAATCAAGATTTCAATTTTACGGAAGTCTGACATTATTCAAGAACTAATTGAGCCTTTGACATTAAGTGTTCATATAAGACTT
PCR sequence from FREP_K3 -----|
*****|
610 620 630 640 650 660 670 680 690 700
.....|
FREP_K3_Locus_3534_Tr_154 TAAGCCAAGGTCATAAGGAAACTTCTACTATTCAATCTCTGTTTATACTTCATGAGACTAATGGTGTTCATTGCATATATAAATAAACATCAACCCGTTGT
PCR sequence from FREP_K3 -----|
AGGTCATAATGAATCTCTACTATTCAATCTTGTTTATACTTCATGAGACTAATGGTGTTCATTGCATATATAAATAAACATCAACCCGTTGT
710 720 730 740 750 760 770 780 790 800
.....|
FREP_K3_Locus_3534_Tr_154 TACAACCATTCAGGCAGATAAATTTAAAAAATGTTGAAGGTGAAATCTTTGACAACGAATCAAAAGATTCCTATCTTCAAGTCACCTGGAACATTTTGAAA
PCR sequence from FREP_K3 -----|
TACAACCATTCAGGAAAGATAAATTTAAAAAATGTTGAAGGTGAAATCTTTGACAACGAATCAAAAGATTCCTATCTTCAAGTCACCTGGAACATTTTGAAA
810 820 830 840 850 860 870 880 890 900
.....|
FREP_K3_Locus_3534_Tr_154 CATTTCAGAACTCTGGAATAATTTTTTGTGAAGCTCATGTCAACTGTTTCAGATGGAAGATTTGATAAGCTTCATTCAGCAATGTAAACAATAATAGTACGAGCTT
PCR sequence from FREP_K3 -----|
CATTTCAGAACTCTGGAACATATTTTTTGTGAAGCTCATGTCAACTGTTTCAGATGGAAGATTTGATAAGCTTCATTCAGCAATGTAAACAATAATAGTACGAGCTT
910 920 930 940 950 960 970 980 990 1000
.....|
FREP_K3_Locus_3534_Tr_154 CAACACTAGAGGATTTGCTGAAAGTAAATACAGAAATTACAAGACAGCTGAGTAGACCAAGAAAGCCTACAAAATAATGAACAAAAATAAAGGCCAT
PCR sequence from FREP_K3 -----|
CAACACTAGAGGATTTGCTGAAAGTAAATACAGAAATTACAAGACAGCTGAGTAGACCAAGAAAGCCTACAAAATAATGAACAAAAATAAAGGCCAT
*****|
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### FREP M

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710 720 730 740 750 760 770 780 790 800
.....|
FREP_M_Locus_70165_Tr_6 GATCAAGACGCGAAAGACTACCAAGAACCATTAAGCTTTGTAAGCGGAAACCTTAACGGTGAAACCTCAGTGAACCCAGTCTTCAAGTCACTTGGACCA
PCR sequence from FREP_M -----|
*****|
810 820 830 840 850 860 870 880 890 900
.....|
FREP_M_Locus_70165_Tr_6 AACCAAGTTTTTCACTCTCTGGAAACTATTTCTGTGGAGCACATACTGTGAATAACAGAGGGGATGAGAGAAGATATAACGCGAGACTTACAGTCACTGT
PCR sequence from FREP_M -----|
AACCAAGTTTTTCACTCTCTGGAAACTATTTCTGTGGAGCACATACTGTGAATAACAGAGGGGATGAGAGAAGATATAACGCGAGACTTACAGTCACTGT
910 920 930 940 950 960 970 980 990 1000
.....|
FREP_M_Locus_70165_Tr_6 TGAAGAGACAAAGCTGGAAGATCTAGTTAGTATTGTGAGTGAATTTGCGACAACAAGTTAATGAGTTCCAAGAAGAACAGGAGACGAACAAAGGAAGAGAA
PCR sequence from FREP_M -----|
TGAAGAGACAAAGCTGGAAGATCTAGTTAGTATTGTGAGTGAATTTGCGACAACAAGTTAATGAGTTCCAAGAAGAACAGGAGACGAACAAAGGAAGAGAA
1010 1020 1030 1040 1050 1060 1070 1080 1090 1100
.....|
FREP_M_Locus_70165_Tr_6 ATTAACCTCTGCTCTGAGCATAGAAAGAGTTATCGATAATTTAAGCTTCTGTTGAAACATACTGAAAAAGAGATTTGATGAAGATATCTTCCTATGAAAA
PCR sequence from FREP_M -----|
ATTAACCTCTGCTCTGAGCATAGAAAGAGTTATCGATAATTTAAGCTTCTGTTGAAACATACTGAAAAAGAGATTTGATGAAGATATCTTCCTATGAAAA
1110 1120 1130 1140 1150 1160 1170 1180 1190 1200
.....|
FREP_M_Locus_70165_Tr_6 ACGAAATAAGGAAGATTTATGCTGATCAAGAAATGATGGATATAGCTCCATATCTATGTCATGATGTTGAAAGTACTGAAGACCCGCTTGTGGTAACTTT
PCR sequence from FREP_M -----|
ACGAAATAAGGAAGATTTATGCTGATCAAGAAATGATGGATATAGCTCCATATCTATGTCATGATGTTGAAAGTACTGAAGACCCGCTTGTGGTAACTTT
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          1210      1220      1230      1240      1250      1260      1270      1280      1290      1300
          |.....|.....|.....|.....|.....|.....|.....|.....|.....|.....|
FREP_M_Locus_70165_Tr_6 ACCTTCAGGGTTAAAGGTTATGTGTGACACCAAGACAGAAGTGGTGGGTGGATCATCATTAGAGAGAAGAAATCAACGGAAAAGTTGATTTCTACAGAAAT
PCR sequence from FREP_M ACCTTCAGGGTTAAAGGTTATGTGTGACACCAAGACAGAAGTGGTGGGTGGATCATCATTAGAGAGAAGAAATCAACGGAAAAGTTGATTTCTATAGAAAGC

          1310      1320      1330      1340      1350      1360      1370      1380      1390      1400
          |.....|.....|.....|.....|.....|.....|.....|.....|.....|.....|
FREP_M_Locus_70165_Tr_6 TGGCAGGCATACCGTGACGGCTTTGGTGGATTCAACATGGTGAATTTTACCTGGGAAATGAAATTATTTTAAATTGACCACTAAAAGAAAATATAAAC
PCR sequence from FREP_M TGGCAGGCATACCGTGACGGCTTTGGTGGATTCAACATGGTGAATTTTACCTGGGAAATGAAATTATTTTAAATTGACCACTAAAAGAAAATATAAAC

          1410      1420      1430      1440      1450      1460      1470      1480      1490      1500
          |.....|.....|.....|.....|.....|.....|.....|.....|.....|.....|
FREP_M_Locus_70165_Tr_6 TAAGAATCGATTGAAATATGGAAACACGACATATTTTGCACAATACTCAGATTTTAAATTGTTAGGTGAAAACAACAAGTTTAAACTCAAATAGGAAA
PCR sequence from FREP_M TAAGAATCGATTGAAATATGGAAACACGACATATTTTGCACAATACTCAGATTTTAAATTGTTAGGTGAAAACAACAAGTTTAAACTCAAATAGGAAA

          1510      1520      1530      1540      1550      1560      1570      1580      1590      1600
          |.....|.....|.....|.....|.....|.....|.....|.....|.....|.....|
FREP_M_Locus_70165_Tr_6 TTATTTCAGGTAACGCTGGCGTAGTCTAAAACGACATCATAATAAATATTTTACAACATTCGATAAAAAACAACGATAGGACAGGCTGGCATTGCCGTAAA
PCR sequence from FREP_M TTATTTCAGGTAACGCTGGCGTAGTCTAAAACGACATCATAATAAATATTTTACAACATTCGATAAAAAACAACGATAGGACAGGCTGGCATTGCCGTAAA
          *****

          1610      1620      1630      1640      1650      1660      1670      1680      1690      1700
          |.....|.....|.....|.....|.....|.....|.....|.....|.....|.....|
FREP_M_Locus_70165_Tr_6 ACCAGGCAACGGTGCCTGGTGGTACGATGGATGTTCTGATTCAAACCTTAACGGCAATGGGGAAGAGCCGAACCCGATGGCCTCTACTGGGATACTATAG
PCR sequence from FREP_M ACCAGGCAACGGTGCCTGGTGGTACGATGGATGTTCTGATTCAAACCTTAACGGCAATGGGGAAGAGCCGAACCCGATGGCCTCTACTGGGATACTATAG
          *****

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