

SUPPLEMENTARY INFORMATION

Systematic Study of the SOD Genes in Allotetraploid Rapeseed: Genome Wide Identification, Molecular Evolution, Codon Usage Bias, and Expression Profiling

M. Kanani Sarcheshmeh^a, A. Aalami^{a,*}, A. Abedi^a

^a*Department of Plant Biotechnology, Faculty of Agricultural Sciences, University of Guilan, Rasht, Iran*

*e-mail: ali_aalami@guilan.ac.ir

Received April 17, 2026; revised May 21 2026; accepted May 21, 2026

Supplementary file 1: *B. napus* SOD protein sequences

>BnFSD4

MASSCVVTTSSFCTVSDSSIRLKSSKLVHLSNQRRRSLGSRGGLKVEAYYGLKTPPYPL
DALEPYMSQRTLEVHWGKHHRGYVDNLNKQLGKDDKLYGYTMEELIKATYNNGNPLPEFN
NAAQVYNHDFFWESMQPGGGDMPQKGVLDQIEKDFGSFTNFREKFTNAALTQFGSGWVWL
VLKREERRLEVVKTSNAINPLVWDDIPIISLDVWEHSYYLDYKNERGKYINTFLNHLVSW
NAAMSRMARAEAFVNLGEPNIPIA*

>BnCSD4

MMSFLRSVATIPRAASATPTESSLHSFSSTKPQTFFPSSSHRSLPRLRWGYKRIFASSPM
ACVPQVSATAVSEFKGPAIFGVVRFVQISMENVIIEASFGGLSPGKHSWCINEYGDLTGK
AASTGNIYNPLQDDQTATQLPGDLGTLEADQNGEALYTVKKEKMKVTDLIGRAVVVYETE
DRSLQGITAAVVARSGEVGESCRKLCSCDGTTVWEATVY*

>BnCSD11

MSTSRAIYQQPQSSFSPIIHFGGISSYSLPKGYPEITKDHKTMAGVAVLNSSEGVKGT
IFFTHEGNATTVTGTVSGLKPLHGFHVHALGDTTNGCMSTGPHFNPDGKTHGAPEDAN
RHAGDLGNIIVGDDGTATFTITDSQIPLSGPNSIVGRAVVVHADPDDLKGKGHELSLSTG
NAGGRVACGK*

>BnFSD6

MAASAAVTANYVLKPPPYPLDALEPHMSKQTFEHWGKHHRAYVDNLKKQVLGSELEGKP
LEHIIQNTYNNGDLLPPFNNAQAWNHEFFWGSMPGGGGKPSGELLALLERDFTSYEKF
YDEFNAAATQFGAGAWLAYADNKLKVVKTPNAVNPLPLLTIDVWEHAYYLDQFQNRNP
DYIKTFMNNLVSEAVSSRLEAAKAASS*

>BnFSD8

MMTTTSSFLSSRCSLLTSQGNRQMQWRHEKRQFSRKVAVSGVVVRAGFELKPPPYPLD
ALEPHMSRETLDYHWGKHHKTYVENLNKQILGTDLDGLSLEEVVLLSYNRGNMLPAFNNA
AQAWNHEFFWESIQQPGGGKPSGDLLRLIERDFGSFDDFVERFKAAASSNFGSGWTWLAY
KANRLDVANAVNPLPKEDKKLVIVKTPNAVNPLVWDYSPLLTIDTWEHAYYLDQFENRRV
EYINTFMEKLVSWETVSTRLESAMARAAQREQEGTDEDEEIPDDEEPEVYLDASEEVD
*

>BnMSD1

MQIHHQKHHQAYVTNYYNNALEQLDQAVSKGDASAVVKLQSAIKFNGGGHVNHSIFWKNLA
PVKEGGGEPPKGALGGAIDTHFGSLEGLVKKMSAEGAALQSGGWVWLGDKELKKLVVD
TANQDPLVTKGKSLVPLVGIDVWEHAYYLYKYNVRPEYLKNVWKVINWKYASEVYEKECK
*

>BnCSD6

MAKGVAVLNSSEG VKGTIFFTQEGDGATTVTGTVSGLKPGPHGFHVHALGDTTNGCMSTG
PHFNPDGKTHGAPEDANRHAGDLGNIIVGDDGTATFTITDSQIPLTGPNSIVGRAVVHA
ERDDLKGKGHELSLSTGNAGGRVACGIIGLQG*

>BnCSD5

MAFILRSVATTTATVVAASAILNAIAFSSSSSSSPTNPKPQSLIFSRPSPRGLELARSFA
SSPMTTVPASDSNLSQEDGVMPQLLTEFMVDMKCEGCVNAVKS KLETIEGIEKVDVDLAN
QVVRILGSSSPVKTMSQALSQTGGKARLIGQAVPQDFLVPAAVA EFKGPDIFGVVRFAQVS
MELARIEANFTGLSPGNHSWSINEYGDLTNGAASTGNLYNPFQDHTITEPLGDLGTLEAD
QSGEAFYSGKKEKLKVADLIGRAVVVYKTEDKKSGPGLTAAVIARSAGVGENYKKLCTCD
GTVIWEATNSDFVTSKV*

>BnFSD2

MMMTTSSLLSPCSLLPSQGPNRQTQWRHEKRQFSRKVAVSGVVVRAGFELKPPYPPLDA
LEPHMSRETMDYHWGKHHRTYVENLNKQILGTDLDGLSLEEVVLLSYNRGNMLPAFNNA
QAWNHEFFWESI QPGGGKPSGDLRLIERDFGSFDDFLEKFKAAAASNFGSGWTWLAYK
ANRLDVANAVNPLPKEEDKKLVIVKTPNAVNPVWDYSPLLTIDTWEHAYYLD FENRRVE
YINTFMEKLVSWETVSTRLESAMARAAQREQEGTDTEDEENPDDEEPEVYLDDASEEVD*

>BnMSD4

MSLDVGTGKTTMEPCLESMKTASLPDLPYAYDALEPAISEEIMRLHHLKHHQTYVTNYNK
ALDHLRSALSSGDHSSVVKLQSQIKFNNGGGHVNHAI FWKNLAPVHEGGGKPPQDPLSSAI
DAHFGSLEELMQMNSEGA AVQSGGWVWFGLDKELKRLVVETTANQDPLVTKGSHLVPLI
GIDVWEHAYYPQYKNARA EYLKNIWTVINWKYASDIFEKHNRLNEF*

>BnFSD9

MAASSAVTADYVLKPPPYSLDALEPFMSRQTLEFHWGKHHRAYVENLKKQVLGSDLEGKT
LDHII LNNTYNNGDLLPAFNNAQAWNHEFFWESMKPGGGGKPSGELLARLERDFTSYEKF
YDEFNAAAATQFGAGWAWLAYADNKLKVMKTPNAVNPVLVGSFPLLTIDVWEHAYYLD FQ
QNRRPDYIKTFMNNLVSWEAVSSRLHAAKAASSSSA*

>BnFSD5

MASCLVTTSFCTVSDSSIRLKSSKLVHLSNQRRRSLGSRGGLKVEAYYGLKTPPYPLD
ALEPYMSQRTLEVHWGKHHRGYVDNLNKQLGKDDRLYGYTMEELIKATYNNGNPLPEFNN
AAQVYNHDDFFWESMQPGGDVPIKGVLEQIEKDFGSFTNFREKFTNAALTQFGSGWVWL
LKREERRLEVVKTSNAINPLVWDDIPIINLDVWEHSYYLDYKNERAKYINTFLNHLVSWN
AAMSRMARAEAFVNLGEPTIPIA*

>BnCSD7

MGGPNLRAVALIAGDKNIRGCLQFTQDTSGTTHVTGKISGLSPGFHGFHIHSFGDTTNGC
NSTGPHFNPLNRVHGPPDEEERHAGDLGNI FAGSDGVAEISIKDKQIPLSGQYSILGRAV
VVYGD PDDLGRGGHKLKSTGNAGARVCGCIIGLQAAVDPKL*

>BnCSD13

MGAPNLRAVALIAGDSNVRGCLHFTQDTSGTTHVTGKISGLSPGFHGFHHSFGDTTNGC
NSTGPHFNPLNRVHGGPPDEVERHAGDLGNI FAGPDGVAEISIKDKQIPLSGQYSILGRAV
VVHGD PDDLGRGRGHKLSKSTGNAGARVCGIIGLQSAVDPKL*

>BnCSD2

MKGAVAVLNSSEGKGTIFFTQEGDGVTTVTGTVSGLKPGLHGFHVHALGDTTNGCMSTG
PHFNPDGKQHGAPE DANRHAGDLGNI I VGDDGTATFTITDCQIPLSGPNSIVGRAVVHA
DPDDL GKGGHLSLATGNAGGRVACGIIGLQG*

>BnMSD5

MAIRSVLSTRTL SGLKETSSKLLGFRGIQTFTLPDLPYDYSALEPAISGEIMQIHHQKHH
QTYVTNYYNALEQLDQAVNKGDASTVVKLHSAIKFNGGGHVNH SIFWKNLAPVNQGGGEP
PKGALGGAIDTHFGSLEGLVKKMSAEGAALQSGGWVWLGLDKELKKLVVDTTANQDPLVT
KGASLVPLVGIDVWEHAYYLQYKNVRPDY LKNVWKVINWKYASEVYESECK*

>BnCSD8

MASHTFLSFSSPRLLVSPSTLRSSFGGVSLNLHRPQSVSFPASKKSLTVVSAAKKAVA
VLKGNSDVEGVVTLTQEDTAGPTKVSVRITGLTPGPHGFHLHEFGDTTNGCISTGPHFNP
NNMTHGAPEDEIRHAGDLGNITAKADGVAETTLVDNQIPLTGPNSSVVGRAVVHELKDDL
GKGGHLSLT TGNAGGRLACGMV*

>BnFSD1

MAASAAVTANYVLKPPPYPLDALEPHMSKQTLEFHWGKHHRAYVDNLKKQVLGSELEGKP
LEHIIQNTYNNGDLLPPFNNAQA WNH E FFWESMKPGGGGKPSGELLALLERDFTSYEKF
YDEFNAAAATQFGAGAWLAYADNKLKVVKTPNAVNPLVLGSFPLLTIDVWEHAYYLDFO
QNR RPDYIKTFMNNLVSEAVSSRLEAKAASS*

>BnMSD3

MAIRSVLSRRTLSSSLKESSSKLLGLRGIQTFTLPDLPYDYSALEPAISGEIMQIHHQKHH
QTYVTNYYNALEQLDQAVNKGDASTVVKLHSAIKFNGGGHVNH SIFWKNLAPVNQGGGEP
PKGALGGAIDTHFGSLEGLVKKMSAEGAALQSGGWVWLGLDKELKKLVVDTTANQDPLVT
KGGS LVPLVGIDVWEHAYYLQYKNVRPDY LKNVWKVINWKYASEVYESECK*

>BnFSD7

MASCVVTG SFCSITDSSIRLKSSKLVHLSNQRRRSLVSRGGLKVEAYYGLKTPPYPLD
ALEPYMSKRTLEVHWGKHHRGYVDNLNKQLGKDDRLYGYTMEELIKATYNNGNPLPEFNN
AAQVYNH DFFWESMQPGGDMPPQKGVLEQIEKDFGSFTNFREKFTDAALTQFGSGWVWL
LKREERRLEVVKTSNAINPLVWDDIPIISLDVWEHSYYLDYKNERGRYINSFLNHLVSWN
AAMSRMARAEAFVNLGEPNIP IA*

>BnCSD3

MASF LRSVATTTAAVAASAIP IAIALSSSSSSSTKSQSPNLSFLPRSSPRLGLSR SFA

SSPMTTVPVSDRNLRQEDRVMPQLLTEFMVDMKCEGCVNAVKNKLETVEGRIEKVEVDLP
NQVVRILGSSPVKAMTQALEQTGRKARLIGQGV PQDFLVSAAVAEFKGPDI FGVVRFQV
SMELARIEANFTGLSPGKHSWCINEYGDLTNGAASTGNLYNPLQDHTHTEPLGGLGTLEA
DQSGEAFYTGKKEKLVVDLIGRAVVVYKTEDKNSGPGLTAAVIARSAGVGENYKKLCTC
DGTVIWEATDSDFVTSN*

>BnCSD12

MMSFLRSVATIPRAASATPTEISLHSFSSTKPQTFFPSSSHRSSPRLRWGYTRIFARSPM
ACVPQVSATAVSEFKGPNIFGVVRFVQISMEIVRIEASFGLSPGKHSWCINEYGDLTGK
AASTGNIYNPLQDDQTATQLPGDLGTLEADQNGEALYTVTKEKMKVTDLIGRAVVVYETE
DRSLQGITA AVVARSGEVGESCRKLCSCDGTTVWEATVY*

>BnFSD10

MASCLVTTSSFCTVSDSSIRLKSSKLVHLSNQRSLSRGGLKVEAYYGLKTPPYPLDALE
PYMSQRTLEVHWGKHHRGYVDNLNKQLGKDDRLYGYTMEELIKATYNNGNPLPEFNNAQ
VYNHDDFFWESMQPGGDDVPIKGVLEQIEKDFGSFTNFREKFTNAALTQFGSGWVWLVLKR
EERRLEVVKTSNAINPLVWDDIPIINLDVWEHSYYLDYKNERGKYINTFLNHLVSWNAAM
SRMARAEAFVNLGEPNIPIA*

>BnFSD3

MAASSAVTADYVLKPPYPYSLDALEPHMSRQTLEFHWGKHHRAYVDNLKKQVLGSELEGKT
LDHIILNTYNNGDLLHAFNNAQAWNHEFFWESMKPGGGGKPSGELLALLERDFTSYEKF
YDEFNAAAATQFGAGAWLAYADNKLKVMKTPNAVNPLVLGSFPLLTIDVWEHAYYLDFO
QNRRPDYIKTFMNNLVSEAVSSRLHAAKAASSSSA*

>BnCSD9

MGKGVAVLNSSEGKGTIFFTQEGDGVTSVTGTVSGLKPGLHGFHVHALGDTTNGCMSTG
PHFNPDGKQHGPEDANRHAGDLGNIIVGDDGTATFTITDCQIPLSGPNSIVGRAVVHA
DPDDLKGKGHELSLATGNAGGRVACGIIGLQG*

>BnCSD10

MAFILRSVATTTATVVAASAILNAIAFSSSSSSSPTNLEPQSLNFSRPSRGLGLARSFA
SSPMTTVPASDSSNLSQEDGVMPQLLTEFMVDMKCEGCVNAVSKLETIEGIEKVMDLA
NQVVRILGSSPVKTM SLALEQTSRKARLIGQGV PQDFLVSAAVAEFKGPDI FGVVRFQV
SMELARIEANFTGLSPGNHSWSINEYGDLTNGAASTGNLYNPFQDPTITEPLGDLGTLEA
DQSGEAFYSGKKEKLVADLIGRALVVYKTEDKKSGPGLTAAVIARSAGVGENYKKLCTC
DGTVIWEATNSDFVTSSV*

>BnMSD6

MIIVVSIILLTVFAMSIDVGTGKSTTMDPCLESMKTASLPDLPAYDALEPAISEEIMRL
HHQKHHQTYVTNYNKALEHLRSALADGDHSSVVKLQSQIKFNGGGHVNHAI FWKNLAPVH
EGGGKPPHDP LSSAIDAHFGSLEELMQMNTEGA AVQGSWVWFGLDKELKRLVVETTAN

QDPLVTKGSHLVPLVGIDVWEHAYYPQYKNARA EYLKNIWTVINWKYASDIFVKHNRDLN
EF*

>BnCSD1

MASHTFLSFSSPPRLLVSPSTLRSPFVGVS LNLHRPQSVSFSASKKSLTVVSAAKKAVA
VLKGNSDVEGVVTLTQDD SAGPTKVSVRITGLTPGPHGFHLHEFGDTNGCISTGPHFNP
NNMTHGAP EDEIRHAGDLGNI IANADGVAETTLVDNQIPLTGPNSVVGRA FVVHELKDDL
GKGGHEL SLTTGNAGGRLACGVVGLTPL*

>BnCSD14

MASILRSVATTTAAVAAA SAIPAI AIAFSSSPSSSSSTRSQSTNLSFPHRSSPRRLGLSR SF
ASSPMTTVPVSDRNLRQEDRVM PQLLTEFMVDMKCEGCVNAVKNKLETVEGRIEKVEVDL
ANQVVRI LGSSPVKAMTQALEQTGRKARLIGQGV PQDFLVSAAVA EFKGPDIFGVVRFAQ
VSMELARIEANFTGLSPGKHSWCINEY GDLTNGAASTGNLYNPLQDHTHT EPLGDLGTLE
ADQSGEAFYTGKKEKLKVVDLIGRA VVYETEDKKS GPGLTAAVIARSAGVGENYKKLCT
CDGTVIWEATDSDFVTSN*

>BnMSD2

MAIRSVLSRRTLSSLKESSSKLLGLRGIQTFTLPDLPYDYSALEPAISGEIMQIHHQKHH
QTYVTNYYNALEQLDQAVNKGDASTVVKLHSAIKFNGGGHVNHSIFWKNLAPVNQGGGEP
PKGALGGAIDTHFGSLEGLVKKMSAEGAALQSGSWVWLGLDKELKKLVVDTTANQDPLVT
KGGSLVPLVGIDVWEHAYYLQYKNVRPDY LKNVWKVINWKYASEVYESECK

Coding sequences (CDS)

>BnFSD1

ATGGCTGCTTCAGCTGCTGTAACCGCAA ACTACGTCCTCAAGCCACCTCCATACCCTCTG
GATGCTTTGGAGCCGCATATGAGCAAACAACTCTGGAGTTTCACTGGGGAAAACATCAC
AGGGCTTATGTGGACAACCTCAAGAAACAGGTTCTTGATCCGAGCTCGAAGGCAAGCCC
TTGGAGCATATCATCCAAAACACTTACAACAACGGCGACCTCCTCCCTCCTTTCAACAAC
GCTGCTCAGGCGTGGAACACGAGTTCTTCTGGAATCAATGAAACCCGGTGGTGAGGA
AAACCATCAGGAGAGCTTCTTGCTCTGCTTGAAAGAGATTTCACTTCTTATGAGAAGTTC
TATGATGAGTTCAATGCTGCTGCCG CCACTCAGTTTGGAGCTGGCTGGGCCTGGCTTGCT
TACGCAGACAACAACTCAAAGTAGTGAAA ACTCCAAATGCTGTGAACCCCTTGCTGCTT
GGCTCTTTCCCATTTGCTTACCATTGATGTCTGGGAGCATGCATACTATCTCGACTTCCAG
CAGAACCGCAGACCGGATTACATAAAGACATTCATGAACAATCTTGTGTCTTGGGAGGCT
GTTAGTTCCAGACTTGAGGCTGCCAAGGCTGCTTCTTCCTGA

>BnFSD9

ATGGCTGCTTCAAGTGCTGTAACCGCTGACTACGTTCTCAAGCCACCTCCATACTCTCTG

GAAAGGTTCAAGGCAGCTGCATCCTCCAACCTTGGTTCAGGTTGGACTTGGCTTGCATAC
AAGGCGAACAGACTTGACGTTGCAAATGCAGTAAACCCGCTTCCAAAGGAGGAAGACAAG
AAGCTTGTGATAGTAAAACTCCCAATGCAGTGAATCCACTCGTATGGGACTATTCTCCA
CTTCTCACCATTGATACCTGGGAGCACGCTTACTATCTGGATTTTGAGAACCGAAGAGTC
GAATACATAAATACATTCATGGAAAAGCTTGTGTCATGGGAAACTGTAAGCACAAGGCTA
GAATCTGCAATGGCTCGAGCAGCTCAAGAGACAAGAAGGCACTGATACAGAAGATGAA
GAGATTCCAGATGATGAAGAGCCAGAGGTTTACTTAGATGATGCATCTGAGGAGGTTGAC
TAA

>BnMSD6

ATGATCATCGTTGTTTCTATCATCCTCCTTACTGTTTTTCGCGATGAGCATTGACGTTGGA
ACAGGAAAAAGTACCACCATGGACCCGTGTCTTGAGTCGATGAAGACCGCTTCACTTCCT
GATCTTCCCTACGCTTACGATGCACTAGAGCCAGCGATCAGCGAGGAGATCATGCGGTTG
CACCACCAGAAACACCACCAGACTTACGTTACTAATTACAACAAAGCCCTCGAACATCTC
CGCTCCGCTTGGCCGATGGTGATCACTCCTCCGTCGTCAAACCTCAGAGCCAAATCAAG
TTCAACGGCGGAGGTCACGTTAACCATGCAATCTTCTGGAAAAACCTAGCCCCTGTTTCA
GAAGGAGGTGGTAAGCCACCGCACGATCCTTTGTCTTCGGCTATAGATGCTCATTTTGGC
TCCTTAGAAGAATTAATGCAAAAGATGAACACCGAAGGTGCTGCTGTGCAGGGATCTGGA
TGGGTGTGGTTTGGACTAGACAAAGAGCTAAAGAGACTTGTCTGGAGACCACAGCTAAT
CAGGATCCATTGGTGACTAAAGGATCACACCTGGTTCTCTAGTCGGAATAGACGTATGG
GAGCACGCCTACTATCCACAGTACAAAAATGCAAGAGCAGAGTACTTGAAGAACATATGG
ACTGTGATCAACTGGAAATACGCTTCGGACATATTCGTGAAGCACAATCGAGATCTAAAC
GAGTTTTTAG

>BnCSD13

ATGGGAGCTCCTAATCTGAGAGCGGTGGCTCTTATCGCCGGCGATAGCAACGTCCGAGGA
TGTCTTCACTTTACACAAGACACTTCCGGGACTACTCATGTTACAGGAAAGATATCAGGA
CTATCTCCTGGCTTCCATGGCTTTCATATTCACTCTTTTGGTGATACTACAAATGGCTGC
AACTCTACTGGACCTCACTTCAATCCATTAAATCGAGTTCATGGGCCACCGGATGAGGTA
GAGCGTCATGCTGGAGATTTGGGTAACATTTTTGCCGGACCAGACGGTGTGCTGAAATC
TCAATCAAAGACAAACAGATACCACTTAGTGGGCAGTATTCATACTTGGGAGGGCGGTT
GTTGTACATGGTGATCCTGATGACCTTGGCAGAGGTAGAGGACACAAGCTTAGCAAATCA
ACAGGAAACGCAGGCGCACGAGTTGGATGCGGTATTATCGGACTTCAATCAGCTGTGGAT
CCTAAACTGTAG

>BnMSD1

ATGCAGATCCATCACCAGAAGCATCACCAGGCTTACGTCACTAATTACAACAATGCCCTC
GAGCAGCTCGATCAGGCCGTGAGCAAGGGAGACGCTTCCGCCGTCGTTAAGTTGCAGAGC
GCCATCAAGTTCAACGGCGGAGGTCATGTGAACCACTCTATTTTCTGGAAGAACCTTGCT

CCTGTCAAGGAAGGTGGTGGAGAGCCACCAAAGGGAGCTCTTGGTGGAGCTATTGATACT
CACTTTGGCTCTCTCGAAGGTTTGGTGAAGAAGATGAGTGCTGAAGGTGCTGCTCTGCAA
GGCTCAGGATGGGTGTGGCTCGGTTTAGACAAAGAGCTTAAGAAGCTTGTGGTTGACACA
ACAGCCAATCAGGATCCACTTGTGACGAAAGGAGGAAGCTTGGTTCCTCTGGTGGGTATT
GATGTTTGGGAGCACGCCTACTACTTGCAGTACAAGAATGTGAGGCCGGAGTATCTGAAG
AACGTGTGGAAAGTGATCAATTGGAATATGCAAGCGAAGTTTATGAGAAGGAGTGCAAG
TGA

>BnCSD4

ATGATGTCATTTCTGAGGTCAGTGGCAACGATCCCACGAGCTGCATCTGCGACTCCGACC
GAGTCTTCACTCCATTCTTTCTCCTCTACCAAACCTCAGACATTCCCCCTTCCATCTTCT
CACCGATCTTTGCCTAGACTTCGTTGGGGATACAAGAGAATCTTTGCTAGCTCTCCCATG
GCGTGTGTTCTCAAGTTTCAGTACTGCAGTATCAGAATTCAAAGGCCAGCCATCTTC
GGTGTGGTTCGATTTCGTTCAAATTTCCATGGAAAATGTAATAATTGAAGCCAGTTTTGGT
GGGTTGTCTCCAGGAAAACACAGTTGGTGTATCAATGAGTATGGAGATCTCACAAAAGGA
GCTGCTTCTACAGGGAATATATACAATCCTTTACAAGATGATCAAACCGCCACACAGCTA
CCAGGCGACCTAGGAACGTTGGAGGCAGACCAAATGGAGAAGCGTTATATACGGTAAAG
AAAGAGAAGATGAAGGTAACGGATCTGATTGGACGAGCTGTTGTGGTTTATGAAACAGAG
GATAGTTCGTTACAGGGGATTACTGCTGCTGTTGTTGCTAGAAGCGGAGAAGTAGGAGAG
AGTTGCAGAAAGCTTTGTTCTTGTGATGGAACCACCGTTTGGGAAGCTACTGTTTACTGA

>BnFSD7

ATGGCTTCTTGTGTTGTGACGACAGGCAGTTTCTGTAGTATTACAGATTCTAGTATACGT
TTGAAATCCTCCAAGCTTGTCCATCTGAGTAATCAGCAGAGAAGACGCTCTCTGTGTCC
CGGGGCGGTTTAAAGGTTGAAGCTTACTATGGTCTAAAGACCCCTCCTTATCCTCTTGAT
GCTTTGGAACCGTATATGAGTAAAAGAACACTAGAAGTGCATTGGGGTAAACACCACCGA
GGCTATGTAGACAATCTAAACAAACAGTTAGGGAAAGATGATAGGCTCTATGGATACACC
ATGGAAGAGCTTATCAAGGCGACATACAACAACGGGAATCCTTTGCCTGAGTTCAACAAC
GCTGCGCAGGTCTATAACCATGATTTCTTCTGGGAGTCAATGCAACCTGGTGGTGGAGAC
ATGCCTCAAAGGGTGTCTTGAGCAGATTGAGAAAGATTTTGGGTCAATCAGGAATTC
AGAGAGAAGTTTACTGATGCAGCTCTTACTCAGTTTGGTCTGGCTGGGTCTGGCTTGTT
TTGAAGAGGGAAGAGAGAAGACTTGAAGTGGTAAAACCTCAAACGCCATTAACCCACTA
GTGTGGGATGATATTCGAATTATCAGCTTGGATGTGTGGGAGCACTCTTATTACCTAGAC
TACAAGAACGAGAGGGGTAGGTACATAAACTCGTTTCTGAACCATTTGGTGTGCTGGAAC
GCTGCAATGAGTAGGATGGCACGTGCTGAGGCGTTTGTGAATCTTGGTGAACCAACATC
CCAATTGCCTAA

>BnCSD1

ATGGCTTCTCACACCTTCCTCTCCTTCTCATCGCCTCCGCGCCTCCTCGTTTCCCCTCCC

TCCACTCTCCGTTCCCCTTTTCGTCGGCGTCTCTCTCAACCTCCACCGTCCCCAGTCCGTT
TCCTTCTCCGCCTCGAAGAAATCGCTGACAGTCGTTTCGCCGCGAAGAAAGCTGTCGCT
GTGCTCAAGGGTAACCTCCGACGTCGAAGGAGTTGTTACTTTGACACAAGATGACTCAGCA
GGTCCGACAAAAGTGAGTGTTTCGTATCACCGGTCTCACGCCAGGGCCTCATGGCTTTTAC
CTCCATGAGTTTGGTGATACAACAAATGGATGCATCTCAACAGGGCCACATTTCAACCCT
AACAAATGACACACGGAGCTCCTGAAGACGAGATCCGTCTATGCGGGTGACCTGGGAAAC
ATTATTGCCAACGCCGATGGCGTGCGAGAAACAACACTTGTGGACAATCAGATTCCTCTG
ACTGGTCCTAACTCTGTGTGGAAGAGCCTTTGTGGTTCACGAGCTTAAGGATGACCTC
GGAAAGGGTGGGCATGAGCTTAGCCTGACCACTGGAAACGCAGGCGGGAGATTGGCATGC
GGTGTGGTTGGTTTGACGCCGCTCTAA

>BnCSD12

ATGATGTCATTTCTGAGGTCAGTGGCAACGATCCCACGAGCTGCATCTGCGACTCCGACC
GAGATTTCACTCCATTCTTTCTCCTCTACCAAACCTCAGACATTTCCCCTTTCCATCTTCT
CACCGATCTTCGCCTAGACTTCGTTGGGGTTATACGAGAATCTTTGCTAGGTCTCCCATG
GCGTGTGTTCTCAAGTTTCAGTACTGCAGTATCAGAATTCAAAGGCCAAACATCTTC
GGGGTGGTTGCATTGCTTCAAATTTCCATGGAAATCGTAAGAATTGAAGCCAGTTTGGC
GGGTGTCTCCAGGAAAACACAGTTGGTGTATCAATGAGTATGGAGATCTCACAAAAGGA
GCAGCTTCTACAGGGAATATATACAATCCTTTACAAGATGATCAAACGCCACACAGCTA
CCAGGCGACCTAGGAACGTTGGAGGCAGACCAAAATGGAGAAGCGTTATATACGGTAACG
AAAGAGAAGATGAAGGTAACGGATCTGATTGGACGAGCTGTTGTGTTTATGAAACAGAG
GATAGGTCGTTACAGGGGATTACTGCTGCTGTTGTTGCTAGAAGCGGAGAAGTAGGAGAG
AGTTGCAGAAAGCTTTGTTCTTGTGATGGAACCACCGTTTGGGAAGCTACTGTTTACTGA

>BnCSD9

ATGGGCAAGGGAGTCGCAGTCTTGAACAGCAGTGAGGGTGTTAAGGGGACTATCTTCTTC
ACCCAGGAAGGAGACGGTGTGACCTCTGTGACTGGAACAGTTTCTGGACTTAAACCTGGT
CTACATGGTTTCCATGTCCATGCTCTTGGTGACACCACTAACGGTTGCATGTCCACCGGT
CCACATTTCAACCCTGATGGTAAACAACACGGTGCCCCAGAGGATGCTAATCGACATGCT
GGTGATCTAGGAAACATCATTGTTGGAGATGATGGAAGTGCACCTTCACAATCACTGAC
TGCCAGATCCCTCTTAGTGACCGAACTCTATTGTCGGAAGGGCTGTTGTTGTCCACGCA
GACCCTGACGATCTCGGAAAGGGGGGCCATGAACTCAGCTTGGCTACCGGAAACGCAGGC
GGCCGTGTTGCTTGCGGTATTATTGGTCTTCAGGGCTAA

>BnFSD4

ATGGCTTCTTCTTGTGTGTGACGACAAGCAGTTTCTGTACTGTTTCAGATTCTAGTATT
CGTTTGAAATCCTCCAAGCTTGTCATCTGAGTAATCAGCAGAGAAGACGCTCTCTTGGG
TCACGTGGTGGTTTGAAGGTTGAAGCTTACTATGGTCTCAAGACCCCTCCTTATCCTCTT
GATGCTTTGGAACCGTATATGAGTCAAGAACAAGTAGAAGTGCATTGGGGTAAACACCAC

CGAGGCTACGTGGACAATCTAAACAAACAGTTAGGGAAAGATGATAAACTCTATGGATAC
ACCATGGAAGAGCTAATCAAGGCCACATACAACAACGGGAATCCTTTGCCTGAGTTCAAC
AACGCTGCTCAGGTCTATAACCATGATTCTTCTGGGAGTCGATGCAACCTGGTGGTGGA
GACATGCCTCAAAAGGGTGTTCTTGACCAGATTGAGAAAGATTTTGGGTCATTTACGAAT
TTCAGAGAGAAGTTCACCTAATGCTGCTCTTACTCAGTTTGGTTCTGGCTGGGTTTGGCTT
GTTTTGAAGAGGGAAGAGAGAAGACTTGAAGTGGTGAAAACCTCAAACGCCATTAACCCA
CTAGTGTGGGACGATATTCGAATCATCAGCTTGGATGTATGGGAGCACTCTTATTACCTA
GACTACAAGAACGAGAGGGGAAAGTACATAAACACGTTTCTGAACCATTGGTGTCTGTGG
AACGCTGCAATGAGTAGGATGGCACGTGCTGAGGCGTTTGTGAATCTGGTGAACCCAAC
ATCCCAATTGCCTAA

>BnCSD6

ATGGCCAAGGGAGTTGCAGTTTTGAACAGCAGTGAGGGTGTTAAGGGGACTATCTTCTTC
ACCCAGGAAGGAGATGGTGCCACAACGTGACTGGAACGTGTTCTGGTCTTAAACCTGGT
CCCCATGGTTTCCATGTCCATGCTCTTGGTGACACCACCAACGGTTGCATGTCTACCGGT
CCACATTTCAACCCTGATGGTAAAACCCACGGTGACCTGAGGATGCTAATCGTCATGCT
GGAGATCTAGGAAACATCATTGTTGGTGATGATGGAACGCCACCTCACAATCACTGAC
AGCCAGATTCTCTTACTGGACCAAACCTCTATTGTAGGAAGGGCTGTTGTTGTCCATGCA
GAACGTGATGACCTTGGAAAGGGAGGCCATGAACTCAGCTTGTCTACTGGAATGCAGGA
GGCCGTGTTGCTTGTGGTATTATTGGTCTTCAGGGCTAA

>BnCSD14

ATGGCTTCAATTCTGCGGTCAGTGGCAACTACTACAGCCGCCGTTGCCGCCGCTCTGCG
ATTCCAATCGCGATCGCCTTCTCCTCTTCTCCTTCTCCTCTCTACCAGATCTCAATCT
ACCAATCTCTCCTTCCCCACCGATCGTCTCCACGTCGCTTGGGTCTTTCACGAAGCTTC
GCTAGCTCTCCGATGACGACCGTCCCCGTTTCCGATCGTAATCTCCGTCAGGAGGATCGA
GTCATGCCTCAGCTCCTTACTGAGTTTATGGTGGATATGAAGTGTGAGGGTTGTGTTAAC
GCCGTGAAGAACAAGTTAGAAACCGTTGAAGGTAGGATTGAGAAAGTGAGGTGGATTG
GCTAACCAAGTTGTGAGGATACTTGGATCTTCCCCTGTTAAGGCTATGACTCAAGCTTTG
GAGCAAACCGGTCGTAAAGCTCGTTTGATTGGCCAAGGTGTTCCCTCAAGACTTCTTGGTC
TCGGCTGCAGTGGCGGAGTTCAAAGGACCAGACATCTTTGGAGTTGTAAGATTGCTCAG
GTCAGTATGGAGCTCGCGAGGATCGAAGCCAACCTTACTGGCTTGTCCCCCGGAAACAC
AGTTGGTGTATCAACGAGTATGGTGATCTCACAACGGAGCAGCTAGCACTGGGAACCTTG
TACAACCCACTTCAAGATCATACCCACACAGAGCCATTGGGCGACCTGGGAACACTAGAG
GCAGACCAAAGCGGAGAGGCGTTTTACACGGGAAGAAAGAGAAGCTCAAGGTTGTGGAT
CTAATTGGGCGAGCCGTGGTGGTTTACGAGACAGAGGATAAGAAGTCTGGTCCGGGATTG
ACAGCTGCAGTGATTGCTAGAAGCGCAGGAGTTGGAGAAAACCTACAAGAAGCTTTGTACT
TGTGATGGTACTGTCAATTGGGAAGCTACAGACAGCGATTTTCGTTACCAGTAATTAA

>BnCSD11

ATGTCGACCTCTCGTGCCTATATACAACAACCACAAAGCAGCTTCTCCCCCAGATTATT
CACTTCCAAGGCATTTTCATCTTATTCACTTCCAAAGGGGTACCCTGAGATCACAAAGGAT
CACAAAACATATGGCCAAGGGAGTTGCAGTTCTGAACAGCAGTGAGGGTGTTAAGGGGACC
ATCTTCTTCACCCATGAAGGAAACGGTGCCACTACTGTGACAGGAAGTGTTCCTGGCCTT
AAACCTGGTCTCCATGGTTTCCATGTCCATGCTCTTGGTGACACCACTAACGGTTGCATG
TCTACCGGTCCACATTTCAACCCTGATGGTAAACTCACGGTGACCGGAGGATGCTAAT
CGTCATGCTGGCGATCTAGGAAACATCATTGTTGGGGATGATGGAAGTCCACCTTCACA
ATCACTGACAGCCAGATTCCCCTTAGTGGTCCAACTCTATTGTCGGAAGGGCCGTTGTT
GTCCACGCAGACCCTGATGACCTCGGAAAGGGAGGCCATGAACTCAGCTTGTCTACTGGA
AACGCAGGCGGCCGTGTTGCTTGTGGTAAGTAG

>BnFSD5

ATGGCTTCTTGCTTGTGACGACAAGCAGTTTCTGTACTGTTTCAGATTCTAGTATACGT
TTGAAATCCTCCAAGCTTGTCCATCTGAGTAATCAGCAGAGAAGACGCTCTCTGGTTCA
CGAGGTGGTTTAAAGGTTGAAGCTTACTATGGCCTAAAGACCCCTCCTTATCCTCTTGAT
GCTTTGGAACCGTACATGAGCCAAAGAACTAGAAAGTGCATTGGGGAAAACACCACCGA
GGCTACGTGGACAATCTAAACAAACAGTTAGGGAAAGATGATAGACTCTATGGATACACC
ATGGAAGAGCTTATCAAGGCCACATACAACAACGGGAATCCTTTGCCTGAGTTCAACAAC
GCTGCACAGGTTTATAACCATGATTTCTTCTGGGAGTCAATGCAACCTGGTGGTGAGAT
GTGCCATATAAAAGGTGTTCTTGAGCAGATTGAGAAAGATTTTGGGTCGTTTACGAATTC
AGAGAGAAGTTTACTAATGCTGCTCTTACTCAGTTTGGTTCTGGCTGGGTCTGGCTTGTT
TTGAAGAGGGAAGAGAGGAGACTTGAAGTGGTGAACCTCAAACGCCATTAACCCACTT
GTGTGGGATGATATTCCAATCATCAACTTGGATGTGTGGGAGCACTCTTATTATCTGGAC
TACAAGAACGAGAGGGCTAAGTACATAAACACGTTTCTGAACCATTGGTGTCTGGAAC
GCTGCCATGAGTAGGATGGCACGTGCTGAGGCCTTTGTGAATCTTGGTGAACCCACCATC
CCAATTGCTTAA

>BnCSD3

ATGGCATCATTTCTGCGGTCACTGGCAACGACTACAGCCGCCGTAGCCGCCGCTCTGCG
ATTCCAATCGCGATCGCCCTCTCCTCTCCTCATCTTCTCTACTAAATCCAATCTCCC
AATCTCTCCTTCTCCTCCCCGATCGTCTCCACGTCGCTTGGGGCTTTCACGAAGCTTCGCT
AGCTCTCCGATGACGACCGTCCCGTTTCCGATCGTAATCTCCGTGAGGAGGATCGAGTC
ATGCCTCAGCTTCTTACTGAGTTCATGGTGGATATGAAGTGTGAGGGTTGTGTTAACGCC
GTGAAGAACAAGTTAGAACTGTTGAAGGTAGGATTGAGAAAGTGAGGTGGATCTGCCT
AACCAAGTTGTGAGGATACTTGGATCTTCTCCTGTTAAGGCTATGACTCAAGCTTTGGAG
CAAACCGGTGCTAAAGCTCGTTTGATTGGCCAAGGTGTTCTCAAGACTTCTTGGTCTCG
GCTGCAGTGGCGGAGTTCAAAGGACCAGACATCTTTGGGGTGGTTAGATTTGCTCAGGTC

AGTATGGAGCTCGCGAGGATTGAAGCCAACTTTACTGGCTTGTCTCCCGGTAAACACAGT
TGGTGTATCAACGAGTATGGAGATCTCACAACGGAGCAGCCAGCACCGGAACTTGTAC
AACCCACTTCAAGATCATACCCACACAGAGCCATTGGGCGGCCTGGGAACACTAGAGGCA
GACCAAAGCGGAGAGGCGTTTTTACACGGGGAAGAAAGAGAAGCTCAAGGTTGTGGATCTA
ATTGGGAGAGCCGTGGTGGTTTTACAAGACAGAGGATAAGAAGCTCAGGGCCTGGATTAACA
GCTGCAGTGATTGCTAGAAGCGCAGGAGTTGGAGAAAAGCTACAAGAAGCTTTGTACTTGT
GATGGTACTGTCAATTTGGGAAGCTACAGACAGCGATTTCGTTACCAGTAATTAA

>BnCSD7

ATGGGAGGTCCTAATCTGAGAGCGGTGGCTCTTATCGCCGGCGATAAAAAACATCCGAGGA
TGTCTTCAATTACACAAGACACTTCCGGGACAACCTCATGTAACAGGAAAGATCTCAGGA
CTGTCTCCTGGCTTCCATGGCTTTCATATTCACTCTTTTGGTGATACCACAAATGGCTGC
AACTCTACTGGACCTCACTTCAATCCATTAAATCGAGTTCATGGGCCACCGGATGAGGAA
GAGCGTCATGCTGGAGATTTGGGTAACATTTTCGCTGGATCAGACGGTGTGCTGAAATC
TCGATCAAAGACAAACAGATACCACTTAGTGGGCAGTATCCATACTTGGGAGGGCGGTT
GTTGTATATGGTGATCCTGATGACCTTGGCAGAGGAGGACACAAGCTTAGCAAATCAACA
GGAAACGCAGGCGCACGAGTTGGATGCGGTATTATCGGACTTCAAGCAGCTGTGGATCCT
AAACTATAG

>BnFSD10

ATGGCTTCTTGTCTTGTGACGACAAGCAGTTTCTGTACTGTTTCAGATTCTAGTATACGT
TTGAAATCCTCCAAGCTTGTCCATCTGAGTAATCAACGCTCTCTTGGTTCACGAGGTGGT
TTAAAGGTTGAAGCTTACTATGGCCTAAAGACCCCTCCTTATCCTCTTGATGCTTTGGAA
CCGTACATGAGCCAAAGAACACTAGAAAGTGCATTGGGGTAAACACCACCGAGGCTACGTG
GACAATCTAAACAAACAGTTAGGGAAGATGATAGACTCTATGGATACACCATGGAGGAG
CTTATCAAGGCCACATACAACAACGGGAATCCTTTGCCTGAGTTCAACAACGCTGCACAG
GTTTATAACCATGATTTCTTCTGGGAGTCTATGCAACCTGGTGGCGGAGACGTGCCTATA
AAGGGTGTTCTTGAGCAGATTGAGAAAGATTTTGGGTCGTTTACGAATTTAGAGAGAAG
TTTACTAATGCTGCTCTTACTCAGTTTGGCTCTGGCTGGGTTTGGCTTGTTTTGAAGAGG
GAAGAGAGAAGGCTTGAAGTGGTGAACCATCAACGCCATTAACCCACTTGTTGTGGGAC
GATATTCCAATCATCAACTTGGATGTGTGGGAGCACTCTTATTATCTGGACTACAAGAAC
GAGAGGGGTAAAGTACATAAACACGTTTCTGAACCATTGGTGTGCTGGAACGCTGCCATG
AGTCGGATGGCACGTGCTGAGGCCTTTGTGAATCTTGGCGAGCCCAACATCCCAATTGCT
TAA

>BnFSD3

ATGGCTGCTTCAAGTGTGTAAACCGCTGATTACGTTCTCAAGCCACCTCCATACTCTCTG
GATGCTTTGGAGCCGCATATGAGCCGACAACTCTGGAGTTTCACTGGGGAAAGCATCAC
AGGGCTTACGTGGACAACCTCAAAAAACAAGTACTTGGATCCGAGCTTGAAGGCAAGACC

TTAGACCACATCATCCTCAACACTTACAACAATGGCGACCTACTCCATGCTTTCACAAC
GCTGCTCAGGCATGGAACACGAGTTCTTCTGGGAATCAATGAAACCAGGAGGTGGTGA
AAACCATCAGGAGAACTTCTTGCTCTGCTTGAAAGAGATTTCACTTCTTATGAGAAGTTT
TATGATGAGTTCAATGCTGCTGCTGCCACTCAATTCGGAGCTGGCTGGGCCTGGCTTGCT
TACGCAGATAACAACTCAAAGTAATGAAAACCTCCAAATGCTGTGAATCCCCCTTGCTGCT
GGTTCTTTTCCATTGCTTACCATTGACGTCTGGGAGCATGCTTACTATCTAGACTTTCAG
CAGAATCGAAGACCGGATTACATAAAGACATTGATGAACAATCTTGTGTCTTGGGAGGCT
GTAGTTCCAGACTTCACGCTGCCAAGGCTGCTTCTTCTCTCTGCTTAA

>BnFSD2

ATGATGATGACAACCACTTCCTCGTTGCTCTCGCCGTGCTCTCTGCTTCCTTCTCAAGGG
CCAAACCGGCAAACGCAATGGAAGACACGAAAGAGACAGTTCTCGAGAAAGGTAGCT
GTTTCTGGTGTTGTGACAGCGGATTTGAGCTTAAGCCACCTCCCTATCTCTTGATGCT
CTAGAACCGCATATGAGCCGGGAAACAATGGATTATCATTGGGGCAAGCATCACAGAACT
TACGTTGAGAACCTGAACAAGCAAATCCTAGGCACAGATCTAGATGGATTGTCATTGGAA
GAGGTTGTGCTTCTTTCATACACAGAGGCAATATGCTTCCTGCCTTCAACAACGCCGCA
CAGGCATGGAACCATGAGTTCTTCTGGGAGTCTATCCAACCTGGAGGTGGAGGAAAGCCA
AGTGGAGATCTCCTCAGACTGATAGAGAGAGATTTTGGGTCTTTTGATGACTTTTAGAA
AAGTTCAAGGCAGCTGCAGCCTCCAACCTCGGTTCTGGTTGGACTTGGCTTGACATAAAG
GCGAACAGACTTGACGTTGCAATGCAGTAAACCCGCTTCAAAGGAGGAAGACAAGAAG
CTTGTGATAGTAAAACTCCCAATGCAGTGAATCCACTCGTGTGGGACTATTCTCCACTT
CTCACCATTGATACATGGGAGCACGCTTACTATCTGGATTTTGAGAACCGAAGAGTCGAA
TACATAAATACATTGATGAAAAGCTTGTGTCATGGGAACTGTAAGCACAAGGCTAGAA
TCTGCAATGGCTCGAGCAGCTCAAAGAGAACAAGAAGGAAGTATACAGAAGATGAAGAG
AATCCAGATGATGAAGAGCCAGAGGTTTACTTAGATGATGCATCTGAGGAGGTTGACTAA

>BnFSD6

ATGGCTGCTTCAGCTGCTGTAACCGCAAACCTACGTCCTTAAGCCACCTCCATACCTCTG
GATGCTTTGGAGCCGCATATGAGCAAACAACTCTGGAGTTTCACTGGGGAAAACATCAC
AGAGCTTATGTGGACAACCTCAAGAAACAGGTTCTTGGATCCGAGCTTGAAGCAAGCCC
TTGGAGCATATCATCCAAAACACTTACAACAACGGCGACCTCCTCCCTCTTCAACAAC
GCTGCTCAGGCGTGGAACACGAGTTCTTCTGGGGATCAATGAAACCCGGTGGTGGAGGA
AAACCATCAGGAGAGCTTCTTGCTCTGCTTGAAAGAGATTTCACTTCTTATGAGAAGTTC
TATGATGAGTTCAATGCTGCTGCCGCCACTCAGTTTGGAGCTGGCTGGGCCTGGCTTGCT
TACGCAGACAACAACTCAAAGTAGTAAAACCTCCCAATGCTGTGAACCCCTTCCATTG
CTTACCATTGATGCTCTGGGAGCATGCATACTATCTCGACTTCCAGCAGAACCGCAGACCG
GATTACATAAAGACATTGATGAACAATCTTGTGTCTTGGGAGGCTGTAGTTCCAGACTT
GAGGCTGCCAAGCTGCTTCTTCCTGA

>BnCSD8

ATGGCTTCTCACACCTTCTCTCTCTCATCGCCTCCGCGCCTCCTCGTTTCCCCCTCCG
TCCACTCTCCGTTCTCTTTTCGGCGGCGTCTCTCTCAACCTCCACCGTCCCCAGTCTGTT
TCCTTCCCGGCCTCGAAGAAATCGCTGACAGTCGTTTCCGCCGGAAGAAAGCTGTTGCT
GTGCTCAAGGGTAACTCCGACGTCGAAGGAGTTGTTACTTTGACACAAGAAGACACAGCA
GGTCCTACAAAAGTGAGTGTTTCGTATCACCGGTCTCACACCAGGGCCTCATGGCTTTCAC
CTCCATGAGTTTGGTGATACAACAAATGGATGCATCTCAACAGGGCCACATTTCAACCCT
AACAACATGACACACGGAGCTCCTGAAGACGAGATCCGTCATGCGGGTGACCTGGGAAAC
ATTACTGCCAAGGCCGATGGCGTGGCAGAAACAACACTTGTGGACAATCAGATTCTCTG
ACTGGTCCTAACTCTGTTGTTGGAAGAGCCTTGTGGTTCACGAGCTTAAGGATGACCTC
GGAAAGGGTGGGCATGAGCTTAGCCTGACCACTGGAACGCAGGCGGGAGATTGGCATGC
GGTATGGTTTAA

>BnCSD5

ATGGCATTATTTCTACGGTCAGTGGCAACGACCACAGCCACCGTAGTTGCTGCGTCTGCG
ATTCTAAACGCGATCGCCTTCTCCTCTCTTCTTCTTCTTCCCCTACCAACCCCAAACCT
CAATCTCTCATTTTCTCCCGACCGTCTCCACGTGGCTTGGAGCTTGACGAAGCTTTGCT
AGCTCTCCCATGACGACCGTCCCAGCTTCTGATAGTAATCTCTCTCAGGAGGATGGAGTC
ATGCCTCAGCTCCTTACTGAGTTTATGGTGGATATGAAGTGTGAGGGTTGTGTAAACGCC
GTGAAGAGCAAGTTAGAACTATTGAAGGGATTGAAAAAGTGGATGTGGATTTGGCTAAC
CAAGTTGTGAGGATACTTGGATCTTCCCCTGTTAAGACTATGAGTCAAGCTTTGTCAAA
ACCGGTGGAAAAGCTCGTTTGATTGGCCAAGCTGTTCTCTCAAGACTTCTTAGTCCCGGCT
GCAGTAGCGGAGTTCAAAGGCCAGACATCTTTGGGGTAGTAAGATTTGCTCAGGTCAGC
ATGGAGCTTGCAAGAATCGAAGCCAACCTTACTGGCTTGTCTCCCGGAAACCACAGTTGG
TCTATCAACGAGTATGGAGATCTCACAACGGAGCAGCTAGCACAGGGAACCTGTACAAC
CCATTTCAAGATCACACAATCACAGAGCCATTGGGCGACCTGGGAACACTAGAGGCAGAC
CAAAGCGGAGAGGCGTTTTACTCCGGAAGAAAGAGAAGCTCAAGGTTGCTGATCTTATA
GGGAGAGCTGTGGTGGTTTACAAGACAGAGGATAAGAAGTCAGGACCGGGATTGACAGCT
GCAGTGATTGCTAGAAGTGCAGGAGTTGGAGAAAACACAAAAGCTTGTACTTGTGAT
GGTACTGTCATTTGGGAAGCTACAAACAGTGATTTTGTGACCAGTAAGGTTTAG

>BnMSD3

ATGGCGATTCTGTTCTGTATTGAGCAGAAGAACCCTATCCAGCCTAAAGGAGTCGTCTTCT
AAGCTTCTGGGACTCAGAGGAATCCAGACCTTCACGCTTCTGATCTACCCTATGATTAC
AGCGCGCTGGAGCCGGCGATAAGCGGCAGATTATGCAGATTCATCACCAGAAGCATCAC
CAGACTTACGTACTAATTACAACAATGCCCTCGAGCAGCTTGATCAGGCCGTGAACAAG
GGAGACGCTTCAACTGTTGTCAAGCTTCATAGCGCCATCAAGTTCAACGGCGGAGGTCAT
GTGAACCATTCGATTTTCTGGAAGAATCTTGCTCCTGTCAATCAAGGTGGTGGAGAGCCA

CCGAAGGGAGCACTTGGTGGAGCCATTGACACTCACTTTGGCTCTCTTGAAGGTTTGGTG
AAAAAGATGAGTGCTGAAGGTGCTGCTCTTCAAGGCTCAGGCTGGGTGTGGCTCGGTTTA
GACAAAGAACTTAAGAAGCTTGTGGTTGACACAACCGCCAATCAGGATCCACTTGTGACA
AAAGGAGGAAGCTTGGTTCCTCTGGTGGGTATAGATGTTTGGGAGCACGCCTACTACTTG
CAGTACAAGAATGTGAGGCCGGATTATCTGAAGAACGTGTGGAAAGTGATCAACTGGAAA
TACGCAAGCGAAGTTTATGAGAGTGAATGCAAGTGA

>BnMSD4

ATGAGCCTTGACGTCGGAACAGGAAAAACCACCATGGAACCGTGTCTCGAATCGATGAAG
ACCGCTTCACTACCTGATCTACCTACGCTTACGATGCCCTAGAGCCAGCGATCAGCGAG
GAGATCATGCGCTTGCACCACCTGAAACACCACCAGACTTACGTTACTAATTACAACAAA
GCCCTCGACCATCTCCGTTCCGCTTGTCCAGTGGTGATCACTCCTCCGTCGTCAAACCTT
CAGAGCCAAATCAAGTTCAACGGCGGAGGTCACGTTAACCATGCAATCTTCTGAAAAAAC
CTAGCCCCTGTTTCATGAAGGAGGTGGTAAGCCACCTCAGGATCCTCTGTCTTCTGCGATA
GATGCTCACTTCGGATCCTTAGAGGAGTTGATGCAAAAAATGAACTCTGAGGGTGCTGCT
GTGCAGGGATCTGGATGGGTGTGGTTTGGGTTAGACAAAGAGCTAAAGAGACTTGTCTGTT
GAGACCACAGCTAATCAGGATCCATTGGTGACTAAAGGATCACACTTGGTTCCTCTGATC
GGAATAGACGTATGGGAGCACGCCTACTATCCACAGTACAAAAATGCAAGAGCGGAGTAC
TTGAAGAACATATGGACTGTGATCAACTGGAAATACGCTTCAGACATATTCGAGAAGCAC
AACCGAGGTCTAAACGAGTTTTAG

>BnMSD5

ATGGCGATTTCGTTCTGTATTGAGCACAGAACCCTATCCGGCCTAAAGGAGACGTCTTCT
AAGCTTCTGGGTTTCAGAGGAATCCAGACCTTCACGCTTCCTGATCTCCCTTATGATTAC
AGCGCGCTGGAGCCGGCGATTAGCGGCGAGATTATGCAGATTACACCACCAGAAGCATCAC
CAGACTTACGTCACTAATTACAACAATGCCCTCGAGCAGCTTGATCAGGCCGTGAACAAG
GGAGACGCTTCCACTGTCGTCAAGCTGCATAGCGCCATCAAGTTCAACGGCGGAGGTCAT
GTGAACCATTCGATTTTCTGGAAGAATCTTGCTCCTGTCAATCAAGGTGGTGGAGAGCCA
CCGAAGGGAGCACTTGGTGGAGCCATTGACACTCACTTTGGCTCTCTTGAAGGTTTGGTG
AAAAAGATGAGTGCTGAAGGTGCTGCTCTGCAAGGCTCGGGATGGGTGTGGCTCGGTTTA
GACAAAGAACTTAAGAAGCTTGTGGTTGACACAACCGCCAATCAGGATCCACTTGTGACA
AAAGGAGCAAGCTTGGTTCCTCTGGTGGGTATAGATGTTTGGGAGCACGCCTACTACTTG
CAGTACAAGAATGTGAGGCCGGATTATCTGAAGAACGTGTGGAAAGTGATCAACTGGAAA
TACGCAAGCGAAGTTTATGAGAGTGAATGCAAGTGA

>BnCSD2

ATGGGCAAGGGAGTTGCAGTCTTGAACAGCAGTGAGGGTGTTAAGGGGACTATCTTCTTC
ACCCAGGAAGGAGACGGTGTGACCACTGTGACTGGAACAGTTTCTGGACTTAAACCTGGT
CTACATGGTTTCCATGTCCATGCTCTTGGTGACACCACTAACGGTTGCATGTCCACCGGT

CCACATTTCAACCCTGACGGTAAACAACACGGCGCCCCAGAGGATGCTAATCGTCATGCT
GGAGATCTAGGAAACATCATTGTTGGAGATGATGGAAGTCCACCTTCACAATCACTGAC
TGCCAGATTCTCTTAGTGGAACAACTCTATTGTGCGAAGGGCTGTTGTTGTCCACGCA
GACCTTGATGACCTCGGAAAGGGAGGCCATGAACTCAGCTTGCTACCGGAAACGCAGGT
GGCCGTGTTGCTTGTGGCATTATTGGTCTTCAGGGCTAA

>BnMSD2

ATGGCGATTTCGTTCTGTATTGAGCAGAAGAACCCTATCCAGCCTAAAGGAGTCGTCTTCT
AAGCTTCTGGGACTCAGAGGAATCCAGACCTTCACGCTTCCTGATCTACCCTATGATTAC
AGCGCGCTGGAGCCGGCGATAAGCGGCAGATTATGCAGATTCATCACCAGAAGCATCAC
CAGACTTACGTCTACTAATTACAACAATGCCCTCGAGCAGCTTGATCAGGCCGTGAACAAG
GGAGACGCTTCAACTGTTGTCAAGCTTCATAGCGCCATCAAGTTCAACGGCGGAGGTCAT
GTGAACCATTCGATTTTCTGGAAGAATCTTGCTCCTGTCAATCAAGGTGGTGGAGAGCCA
CCGAAGGGAGCACTTGGTGGAGCTATTGACACTCACTTTGGCTCTCTGAAGGTTTGGTG
AAAAAGATGAGTGCTGAAGGTGCTGCTCTTCAAGGCTCAGGCTGGGTGTGGCTCGGTTTA
GACAAAGAACTTAAGAAGCTTGTGGTTGACACAACCGCCAATCAGGATCCACTTGTGACA
AAAGGAGGAAGCTTGGTTCTGCTGGGTATAGATGTTTGGGAGCACGCCTACTACTTG
CAGTACAAGAATGTGAGGCCGGATTATCTGAAGAACGTGTGGAAAGTTATCAACTGGAAA
TACGCTAGCGAAGTTTATGAGAGTGAATGCAAGTGA

Genomic DNA sequences

>BnFSD1

GTACGATGCAAAGCCATATCAAAAGGCATCCTCAAACATAAAACCCAAACCACAGATACC
TCTGGCGTGTGGTCTCCTCACTTGCCTTGAAACCAGAGGTTCTGTCTGATTCCCTATCTC
TGATCCACTTTGTGCTTCTGTTCAAGTTTTGCTGATCTCTTACTCTTTGTTCTCTAGAA
CTTTCATTTTAATTTAGTTTTGTATATATCGATCTATGTCTCTGTGATTTGTAACGATAT
TGACTAATTTCTGGACATCTCGATGTTACGTTGTCTGAAATGTGCAGCTTCATTCCCAAA
AGAGAAATGGCTGCTTCAGCTGCTGTAACCGCAAACCTACGTCCTCAAGCCACCTCCATAC
CCTCTGGTATGATTTAGTTTTATCTGTTTCTTCAAATCATTTGGTATTGTCTTGTGCAAA
TGTCACTTTGTGTTGGTGGGATTATATGATTAGGTGATAACACTATTACTTGTTAGGCAT
GGGCATTGCGGGTCCCAATCGGGTTTTCGGTTTTATCCAATCGGGTTTCGGTTTTTCGGTT
TTATCAAAATCAGCCCCATTGCGATTATATGAAAGTTTCGGTTTCGGGACCGGTTTCGGGTTTC
TATCGGGTTTCGGGTCGGGGTTAGTAAATCTTCAAAGAACCGGTACAACCCAATATACATT
CGGGTTTCGGGTTCCAATCGATTTTTTGGTTTAAAAGTACCTGATTTTTTACCTATTTTTATA
ACCAAAACATGAGTAAAATCGGTTCTTCAGTTTTTAAATAACGTGATTCAAACCTATTTTA
TAACCAAAACTTAGGTAAAATCGATTCAAAAATAAGAAACATCAACCATGATCATTCAAA
ATCAAACGAAAAGTAAACATATTTACTGATAAAAAGAAAACCAAATAAATAAAAGCATAA
AACAAAAACCAAGTTCTCATGAAATGATAAACATTTTTTAAACGAAAACAAAACATATATC

TAAATACTTCAAGATTCAACGGCCATCTTCAACCATCAACCTTCATGTAATAGAACCACC
AACATTTCATATAATAGAACCACCAACTTTCATGTAATAGATAAGTATTTTAGATGTTTCTAG
TATTTCTTAGTGATTTTGGATACATATTAGGAATTGAGATCATGTTTGGTACAATATCT
TTTCGAGGTTTTGAATGTTTCGGGTTCTATCGGATATCCATTAGATTCGGGTTTCGGTTC
GGATAATACCCATAACCCGAAATACCACAAAACAAGATCCATTTCGGTACTTACATCGGGT
TCGGATCGGTTTCAGATTCATTTTTATCGGATCGGATTCGGTTCGGGTATCGGGTTCGGT
TTATTTGCCCAGCCCTATTACTTGTTATTTCCACACTAGCCATCAAATTACATTTTTATC
CTCGTCAAAGGCGTTACAAATGAACTCATCTAATTAAATCAAGGACATAGTCAAACATAC
AAGTGTTTAACAAAATTGTTGTGTGGTGGTGTAGTTCAAATATGATGCAGATAAATAT
TGGGATATTTTCAAATATTTATTTAGTTTATTAATTATTTAGATAATTATTTTTATT
AGGATTTTGTGGTTTTATTATATATATAACCATTGAGTTTAAATTTGTATTTAGTTTAT
GATTTGATTAATAAAAATTAAGAGTTTTTTTTTTGTTCTTTATTTTCGGTAGATCATTGT
AATTTCAACGAATTTAAGAAAACATTGATTTTAGATATTTCTAGACTAAATAAGATCCTT
GTATTATCCTAGCTTCGGCTATATCAAATATCACCGTAGATATTGTAAGACTTCGTGAC
CAATAAACTGTTTCGTTGATCTGATCTTAGTGTTTCTTCCTTAGTGGACCTATTGTAAAA
TGTACCTAGTAGTGTTAATGTTTGAGTGTGAGTAAAATTGATGAAATGTTGTTGGTATAA
TATTGGAAAACAAAGGATGCTTTGGAGCCGCATATGAGCAAACAACTCTGGAGTTTCAC
TGGGGAAAACATCACAGGGCTTATGTGGACAACCTCAAGAAACAGGTTCTTGGATCCGAG
CTCGAAGGCAAGCCCTTGGAGCATATCATCCAAAACACTTACAACAACGGCGACCTCCTC
CCTCCTTTCAACAACGCTGCTCAGGTAATAAAGTTGAATTTAAAGAGGTGTGTGATTTGT
TTAGCTGATCAAATGATGTATATAGGCGTGGAACCACGAGTCTTCTGGGAATCAATGAA
ACCCGGTGGTGGAGGAAAACCATCAGGAGAGCTTCTTGCTCTGCTTGAAGAGATTTAC
TTCTTATGAGAAGTCTATGATGAGTTCAATGCTGCTGCCGCCACTCAGTTTGGAGCTGG
CTGGGCCCTGGCTTGCTTGAAGTTGATGGATTCAAGTTTTTTTTTTCTTCAAGTGAGTC
AGATGAAAGAGCTTCACATAACTATTTTGATTTGTTTCCTAACTCGTCTTATATCTCTTT
CAGACGCAGACAACAACTCAAAGTAGTGAAAACCTCAAATGCTGTGAACCCCTTGTGC
TTGGCTCTTCGTAAGTTTCTTTAACCATGAACCTGAATACAGAGTTTCACTTGATTAAA
GATTACTGAACGAATGATTACAAATCCTTAAATCTAATCTTGGTTGTTATTTCTTGCAGC
CATTGCTTACCATTGATGTCTGGGAGGTAAAACAAACACTTTTATAACCGATACCATATA
AAATATTTGCCTTGGGACCTATAAATTGTTGCTGATCTCTCTTTCTCCTTTTGCAAC
AACAAACAGCATGCATACTATCTCGACTTCAGGTAATAATATTTTCATCATAGCGGTCA
TTTTTTGTTCTTTGTGTCAGTATCTTTCTTTTGTGATTGTTGTAATATTTTGTATATGA
GCAGAACCGCAGACCGGATTACATAAAGACATTCATGAACAATCTTGTGCTTGGGAGGC
TGTTAGTTCCAGACTTGAGGCTGCCAAGGCTGCTTCTCCTGAGTCATCATCAGACTTAT
TCGGACCAAAATCTGACTTCAGTTGTGTATGTTATGCATTACTGAAGTTTCTTAATAAAA
TATTGGTCGCGGTTATAAGGACACTGCTCTCTGTTGTAATGTCTCATCGAGTCTTTCAT

CTATTTCTGTTTACTGAGATTTTAATCATCGTGAATAAAGAACTACCATGTTCTCTTG
GGTGGTTTGGTTTTTATCTATTTATCTATTTATCTTTTTGTGTGCAAGGCCTAATATACG
GATTATGGCACGTTGGAACACTACTATAAACTCTCGTGGAGAAAATGCTTAAACATTA
TTACACCTACCTACCTAACCATACACAAGCCACGAGTGTTCGATGGATGGCGTGAAGTA
GAAAGGCCTATCACAGACCTTGCAATGTTACACTCCGTTTCGTATAGCCAAATGGGCCGAC
CAATACCGCCTAACCAATATTTGAGGGTAGGAAGATAATGTTGAAAATGGTTTATACAT
TTTGACTTTTTAAAAATGTTTGAAAAGTCGAATTGATTCTCCAACATAACAACTTTTG
TTTGATGAGCTTCATTCTGTTTCTTG

>BnFSD9

GTACATATGATATGTAGTACTGACATGTACGATGCAACCAAAACCAACATAAAACCCAA
AGACAGAGAGATCGTTGGCGTGTGTTCTCTGACTTGCCCTGAAACTTTGAGGTTCTGAT
TCTATCTATGGTCCACTTTGTAGCTTCTGTTCAAGTTTGGCTCATCTCTTACTTAAGTT
TAATTTAATTTGTATATCGATCTATCTATATGTTTTATGTGTGTTTGTAGAATATTGAT
TCATTAAGACCATCTCGCGATGCTATGTTGTTTGAATGTGCAGATTCTATTATAAAAG
AAATGGCTGCTTCAAGTGCTGTAACCGCTGACTACGTTCTCAAGCCACCTCCATACTCTC
TGGTATGATTTCAATTTATTCATGGTGGGAACGGTCAAGTAGGGTGTTCACGTCGGATGTG
AGGACTGTTAAAGCATAAATTTAAACTTGGGAACCAAGAAAATTGTTCTCTGTGTTCTT
TCCTTAGAGGACCTATTGAAAAAGTTTGGAGTGTTATGTTTAAAGTGAGAGCGATTTTGAT
GAAATATTGTTTGGTACAAAAATTGAAAGGATGCTTTGGAGCCGTTTATGAGCCGACAAA
CTCTGGAGTTTCACTGGGGCAAGCATCACAGGGCTTACGTGGAAAACCTCAAGAAACAGG
TTCTTGGATCCGATCTTGAAGGCAAGACCTTAGACCACATCATCTCAACACTTACAACA
ATGGCGACCTACTCCCTGCTTTCAACAACGCTGCTCAGGTAACAATATAAACCCAATTTT
TTATTTGGGCTTTTAAAGGGTGTATGATTGTTTAGCTGATTAGGTGATGTGTATATATG
TAGGCATGAACACGAGTTCCTCTGGGAATCAATGAAACCAGGTGGTGGTGGAAAACCA
TCAGGAGAGCTTCTTGCTCGGCTTGAAAGAGATTTCACTTCTTATGAGAAGTTTATGAT
GAGTTCAATGCTGCTGCTGCCACTCAATTCGGAGCTGGCTGGGCTGGCTTGCTTGTAAG
TTGACTGATCTCAGTTTTTTCCCTTCAAGGGTTTCATGTTGAACAGCTTCACATAAATAT
TTTAATCTCTTTCTTCTCTTCTTCCAGACGCAGATAACAACTCAAAGTAATGAAAAC
TCCAAATGCTGTGAATCCCTTGTGCTTGGTCTTTTGTAGTATTCCAATCAAGAACTT
GAATACAGAGTTAACTTGATTAGAAATCATCTTACAATTATTACATATTCTTAAAAATA
ATCATGGTGTGATTTCTGCGAGCCATTGCTTACCATTGACGCTCTGGGAGGTATAGTAAA
TACTTTTAGCCCATATCATATACAGTTTTTGTGATAGTTTATGCTACAATTTTATTTTA
TTTTTGGTAATAAGTTTATGCTACAAATTTATGATCTCTTTCTTTAATCTTCAATTGTC
TACATGGAACAGCATGCTTACTATCTAGACTTTCAGGTAATGTAATATTATAACATAACG
GTTCTTTTTTCAGTTTTTTTTTGTGGATTGTTGTAATTTTTTTCTTTGTATGTGAGCAG
AATCGAAGACCGGATTACATAAAGACATTCATGAACAATCTTGTGTCTGGGAGGCTGTT

AGTTCAGACTTCACGCTGCCAAGGCTGCTTCTTCTCTTCTGCTTAAGCAGGAATCAAC
AGACATTTTCGGACCACCTCTCTCTTTTTTTTCAAGACCACCTCTCTCGTTTTGTAAAT
GCGTCATCGAGTTATGCATTACTGAAGTTTCTCAATAAAATATTGGTAGTATAATAAGGA
CACAGCTCTCTCTGTTGTAATGTGTCATTCATCTATTCTTGTCTATTAAATTTTATT
TATCGTGTAATTTGTAATGAAAACACCATGTTCTCTCTATTGTGGGATGTTTTTTGT
GTGTATTAGTTTTTCACTTGATCTCTGTTTTAGGGTCTGCTTATTTGTCATCTATAACTCG
CATGCATAGTCCATATTGAAACAGCATATTCACGTTTTTTGGTATATCAAGTCAACTAT
TGA

>BnCSD10

ATGGCATTATTCTACGGTCAGTGGCAACGACCACAGCCACCGTAGTTGCTGCGTCTGCG
ATTCTAAACGCGATCGCCTTCTCTCTCTTCTTCTTCTTCCCTACCAACCTTGAACCT
CAATCTCTCAATTTCTCCGACCGTCTCCACGTGGCTTGGGGCTTGACGAAGCTTTGCT
AGCTCTCCCATGACGACCGTCCCAGCTTCTGATAGCAGTAATCTCTCTCAGGTTTTAGTG
AAAAAGTTTCAGACTTTTGAGATACCCACTTTCCAAGTTTAGCTTTTTAACTTTCTTGAT
TTGATATGCAGGAGGATGGTGTGTCATGCCTCAGCTCCTTGTAAGTCTTTTTCTTCCCTA
TCTGGATTTTGAATCAATGGATATGATTCAGCTATTGCGAACTTATGTTGTGTGTTTGAA
TATGTCGTTGTTGTTGTTGTTGCTGTTGCTAGACTGAGTTTATGGTGGATATGAAGTGTG
AGGGTTGTGTTAACGCCGTGAAGAGCAAGTTAGAAACCATTGAAGGTAGGTTCTTGAGAT
TGTTCTGTTTTGGTTATGATTTTGGTAAATTTATACTGTTGTTTTCGTTTGTGATGTGTA
AATTGCATTTGATCTTTGAAAGGGATTGAAAAAGTGGATATGGATTTGGCTAACCAAGTT
GTGAGGATACTTGGATCTTCCCTGTTAAGACTATGAGTCTAGCTTTGGAGCAAACAGT
CGAAAAGCTCGTTTGATTGGCCAAGGTGTTCTCAAGGTTAGTTATCTACACACCTTTGG
TTTTTGGTGATAGAGAAGAGTTTGATAATCAATAGAAAGAATATAGCTTTTCTCATTTCA
TAGAACATGTAAGAGCTGTTACATTGGGCTTGTGTGATGTTTCATTTGGGGGATTTACCA
CTTCATGTTCTGTCTTTCCATCGACAGTCTCTTTTTTCTCATTTGTTACTTTTACTCTGT
GATGTGTGTTGGCAGACTTCTTAGTCTCGGCTGCAGTGGCGGAGTTCAAAGGCCAGACA
TCTTTGGGGTAGTAAGATTTGCTCAGGTGAGTATGGAGCTTGCAAGGATTGAAGCCAACT
TCACAGGCTTGCTCTCCGGAACCAAGTTGGTCTATCAACGAGTATGGAGATCTCACAA
ACGGAGCAGCTAGCACAGGGAACCTTGTAACCCATTTCAAGATCCTACAATCACAGAGG
TTACTCGAGCTCACTTTAACAAAAAAACATCAAATAGCATCACATTCTTTATATAACC
ATTTGGTTTTTTTTCTGACAGCCATTGGGCGACCTGGGAACACTAGAGGCAGACCAAAGC
GGAGAGGCGTTTTATTCTGGAAGAAAGAGAAGCTCAAGGTTGCTGATCTTATAGGGCGA
GCTTTGGTGGTTTACAAGACAGAGGATAAGAAGTCAGGACCGGGATTGACAGCTGCAGTG
ATTGCTAGAAGCGCAGGAGTTGGAGAAAACACAAAAGCTTTGTACTTGTGATGGTACT
GTCATTTGGGAAGCTACAAACAGTGATTTCGTGACCAGTAGCGTTTAGTAACAGTAATAA
AAGTGGACACTACATCATTCAGTATTGTAGCAACTAAAGTCTTGTGTTTGGATCAAAATT

TAAGTGTGACTTCAAA

>BnFSD8

CACTAACTAGAGATTATTATTTAAATTAAAATTGCTCTAGTTAAAAGTCTGAGCATGGAA
TAAATTAACAGTACGTAGCATAATAGCCTGAGATAAGAAGGTTCACTTATCTAGACAGAG
AGGAGAAACCTCTGTATACTCATAGCAGGCCATAAATCGATGATGATGACAACCACCTCC
TCGTTTCTCTCGTCGCGGTGCTCTCTGCTTACTTCTCAAGGTTTCTCCTTTTCTATCTCT
CTTATCTCTCCATCTCTGTCTCTCACTCACTATTAGTTTTTTTTTTTTTTTAAACAGGG
CCAAACCGGCAATGCAATGGAAAAGACACGAAAAGGTTCTGTCTTTCAGCCTCTCTGT
TCTCCTAAATCAACTGTTAAATTCTATATGAATGGAGCTCTAGTTTCAGTAATAAGACAT
ACCAAGGAACCATGCATATGTAGTGTTGATGAAATGCTTGACTGAATCTTGAACCTGTT
TTTTTATTTAATGGCGCAGAGACAGTTCTCGAGAAAGGTAGCTGTTTCTGGTGTGTCAG
AGCGGGATTTGAGCTTAAGCCACCTCCCTATCTCTTGTACGTTTTTCGTTATCATGACC
CACCCAGCTTTTAGATTTTAATTTTGGTTGATAGATTATGCACATCATGTGGTAAGGATA
TTGTATTAGTACAAATCTTTGAAGGTTGCTCTACTATGGTAGTTATGATGATGAAATGT
TATGGATGTTAAAAGTGCAACGAAGCGTGAAGGGGAGATGTTGCTCGCTCACTCTGTGTC
TGTCTGTCTTTGGCAGGATGCTCTAGAACCGCATATGAGCCGGGAAACACTGGATTATCA
TTGGGGCAAGCATCACAAAACCTACGTTGAGAACCTGAACAAGCAAATCCTAGGCACAGA
TCTAGATGGATTGTCATTGGAAGAGGTTGTGCTTCTTTCATACAACAGAGGCAATATGCT
TCCTGCCTTCAATAACGCCGCACAGGTAATAGCCAAATATTTCTTCTCCATTGTCTTCCA
CCGCTTTTTTCAAAGATTGGATGTGAATTAAGGTTATGTGAGGCGCTTTGCAGGCATGGA
ACCACGAGTTCCTCTGGGAGTCTATCCAACCTGGAGGTGGAGGAAAGCCAAGTGGAGATC
TCCTCAGACTGATTGAGAGAGATTTTGGGTCTTTTGATGACTTTGTAGAAAGGTTCAAGG
CAGCTGCATCCTCCAACCTTGGTTCAGGTTGGACTTGGCTTGCATGTGAGTGTTTCCAAC
CTATGCGTCCCCTTACCCTATAAAATAAAATGCAAACCACCCCAACTTACTTAGGGGATA
CACTGATGCAGACAAGGCGAACAGACTTGACGTTGCAAATGCAGTAAACCCGCTTCCAAA
GGAGGAAGACAAGAAGCTTGTGATAGTAAAACTCCCAATGCAGTGAATCCACTCGTATG
GGACTATTCTGTAAGTGCTAACTTTCCAAAATGTAGATATAGCTATGGATTGATTTC
TGACACATTTTTTTCATCTGTTTATGTGCAGCCACTTCTCACCATTGATACCTGGGAGGTA
TAATATAAGCTATTTCATCTTTCACTATACGAATTTACCTTGGTTTCTTGATCCCTGACT
TAGTTTTTCTTCTCCTCTTTGTGCAATACAGCACGCTTACTATCTGGATTTTGAGGTAC
CTTCAAAATGTTTCACTAAATTACTGAAAGCACAGGTTCTCAGTTCTCATGTTGTTGTG
TTTTGCGCAGAACCGAAGAGTGAATACATAAAATACATTTCATGAAAAGCTTGTGTCATG
GGAAACTGTAAGCACAAGGCTAGAATCTGCAATGGCTCGAGCAGCTCAAAGAGAACAGA
AGGCACTGATACAGAAGATGAAGAGATTCCAGATGATGAAGAGCCAGAGGTTTACTTAGA
TGATGCATCTGAGGAGGTTGACTAA

>BnMSD5

ATGATCATCGTTGTTTCTATCATCCTCCTTACTGTTTTCGCGATGAGCATTGACGTTGGA
ACAGGAAAAAGTACCACCATGGACCCGTGCTTGTAGTCGATGAAGACCGCTTCACTTCCT
GATCTTCCCTACGCTTACGATGCACTAGAGCCAGCGATCAGCGAGGAGATCATGCGGTTG
CACCACCAGAAACACCACCAGACTTACGTTACTAATTACAACAAAGCCCTCGAACATCTC
CGCTCCGCCTTGGCCGATGGTGATCACTCCTCCGTGCTCAAACCTTCAGAGCCAAATCAAG
TTCAACGCGGAGGTAAGACCAGCTCAGAACCCTATTATCTTTACATCAGCTGCTCCGT
GCTTGTGATCTTAAGGAATTTGACTGATTGCGGTTTACCTCTTTACTTGTCTAGGTCA
CGTTAACCATGCAATCTTCTGGAAAAACCTAGCCCCTGTTTCATGTACGAATACCTTTCTT
GTTGCGCACTCTATTGTTTTGTGATAGTTTATTTTTCTCTAACGGGTAAATCGAATAT
GTAGGAAGGAGGTGGTAAGCCACCGCACGATCCTTTGTCTTCGGCTATAGATGCTCATTT
TGGCTCCTTAGAAGAATTAATGCAAAAGATGAACACCGAAGGTGCTGCTGTGCAGGGATC
TGGATGGGTGGTAGGCGTTCTGTAAAGTCTCTCATCAGCTTGTTAAAAGTTTATTTGAT
AGATTGAATTGTTTTATACTCTTTTGGTGAATAATTCATAACGCAAAACGTGTGTGTGTT
CCTTTGTTCTAGTGGTTTGGACTAGACAAAGAGCTAAAGAGACTTGTGCTGGAGACCACA
GCTAATCAGGTAGTTCAATATAATAAGCTGATTATTTAGTAAACAATATAACATATCAC
AAGAATTTTTTTAATATATAATTTGATATATCACAGAATTTTAAATGAAAATAGAGA
AAAACGATAGAAATAAAAATTGTAGGATCCATTGGTGACTAAAGGATCACACCTGGTTC
CTCTAGTCGGAATAGACGTATGGGAGCACGCCTACTATCCACAGGTACTCAACGAACCTT
TATAATTCTTTGAAATATAGTAATACTATAACTTATTGGTCGGTAGCTAACACGAATGA
CACAACTAATATAAAGTTTTTCATCAATTGGTGTGGGTTATGTATAGTACAAAAATGCAAG
AGCAGAGTACTTGAAGAACATATGGACTGTGATCAACTGGAAATACGCTTCGGACATATT
CGTGAAGCACAATCGAGATCTAAACGAGTTTTTAGATGAAATAACACGTGTGTATATATGT
GTGTGTATAAAATATGTGGATAGAGTTGGTCGTTTTTCCAAAAAGTTTCGTTACTATA
GAACCGAATGCTTTGGTGGTTTTAGTAGTGAGACTCAAATAAATGTCATGTACCTTGGA
TAAAATAACGTTGTGATACGGATGTTAAAGGTTTTAGGAATCTAATTTGTTTTCTTGTC
ATAGCTCTGCATATTTCAAATGCCACTTAATAGTGAGTGTTCAATTTTACCGAATCAA
TTTAAACTGGACCGAAATAATCGATTCAAAAAATAGAAAAAGTAGTATGGATTCTGTAAT
ACAGAATTAAATCAAACGGATGTAATTTTTTAAAAAAGTTTTAGTATATGAATATAATTG
GTATATAAAATCAAAAAGACCGAATAATTAAATATATTAGTATATTTATATGTAAATTT
TATAATAAAATTAATAATATATACATTTTTTTGGTTAATATGACATTCGTAATTAAATA
TTGACTTTTATAGAAGTTTAACTTAAAAAGGTTATTTTGTTTTTTTTTGTATGGGAGC
ACGCCTACTATCCACAGGTACTCAACGAACCTTTATAATTCCTTGAAATATAGTAATACT
ATAACTTATTGGTCGGTAGCTAACACGAATGACACAATAATATAAAGTTTTTCATCAAT
TGGTGTGGGTTATGTATAGTACAAAAATGCAAGAGCAGAGTACTTGAAGAACATATGGAC
TGTGATCAACTGGAAATACGCTTCGGACATATTCGTGAAGCACAATCGAGATCTAAACGA
GTTTTAG

>BnCSD13

GATCAACAATCATATCAATTCCCAAACGCACAGACAGAACCGATGGGAGCTCCTAATCTG
AGAGCGGTGGCTCTTATCGCCGGCGATAGCAACGTCCGAGGATGTC'TTCAC'TTTACACAA
GACACTTCCGGTGATATGTCTTTTCTTCTTTTATCTGCCGTTGGACATGTTTTATTACA
TTTTTTTTGTATGTATTTGTTTTTGTGTGGCAGGGACTACTCATGTTACAGGAAAGATA
TCAGGACTATCTCCTGGCTTCCATGGCTTTCATATTCACTCTTTTGGTGATACTACAAAT
GGCTGCAACTCTACTGGTTGGTCTTTCAACTGTCTGTACTGTACACTTCGAGTTCAAG
ACTATATCTTTTACCGTTTCTCTTCAAGAATCTAATGGTTCGTATCTGAAACACACACA
TACATGTGAAAAGAGTTATTTTGCTTGACCTTGATGCTAACTGGATTGGTTTGGATCGGA
TTTAGTTTAGATGGACTATTACTGTTGCAAAAGAATTCAATCTACTTAAGGAAACATTTA
GATCAGCGATGTAATAGAAGCTGAAACATAGTAAATCTCATTATAGATGTTGGAATGGT
GTTTCGTCTTTGTGATTCTGTTGTTGAGTTCTGTACTTCAGGACCTCACTTCAATCCAT
TAAATCGAGTTTCATGGGCCACCGGATGAGGTAGAGCGTCATGCTGGAGATTTGGGTAACA
TTTTTGCCGGACCAGACGGTATACACTTTTTTTTTCTTCATCTATATATATATATATAT
ATTGTGTTTTTTGAAGAATGATGCTGTATTTTTGGATGAGACATGCTTGTTTCAGGTGTT
GCTGAAATCTCAATCAAAGACAAACAGGTAAACGAATCTTCCTTTTTCACTTCTTCAACC
ATTTAATGTAACAGTACATATTATCACATTGTGCTTATGTCTCTCCCATTTATCTCGGCT
TCTCTATGATTTCAACAGATACCACTTAGTGGGCAGTATTCATACTTGGGAGGGCGGTT
GTTGTACATGGTGATCCTGATGACCTTGGCAGAGGTAGTAACTCTCTTTATAGCCTTTC
AAATATACATATATATGGTCCAATGTCACTGACTTTATACAAAGAAGCAGTAGAAGCTTA
AGGGTCGAATCTCAGTAGTAATCATTGTGTCTAGTTTCATTTAGTTGTGTCAAGTAT
CTGCCACAGTTCTTAGGTTGATGATGTGCTCTGTTGATGATGTTAAATTAAAGAATCCTA
ATCTCTTTGCGGTTGTTACCGTGCAGGAGGACACAAGCTTAGCAAATCAACAGGAAACGC
AGGCGCACGAGTTGGATGCGGTATATTGCTTGCTAACATTTTTGAGAAAACAAAGCAACA
CCATTTTGTTTTCAATGTGTGTGAAGTAACTCACTCTAGGTTTCGATGTTGAACCAGGTA
TTATCGGACTTCAATCAGCTGTGGATCCTAACTGTAGCTTTTGAGATCGATGAACATATC
CACACCTGAGCCACACTCGTTTTTTTAACTGTTAATGTACATCAGAGGCCATAGTTTGTA
TATTGACTGACATACTGTTTGAGACGCAAGTGATAATAATGTACGCCAGTAGTTATCATT

>BnMSD1

GAGACAACCCTAACCACGAAGGAGACTCTCTCACTGTGTCTTGTCTCATCGTCATCTCT
CTATCAACAATGGCGATTGTTCTTTAGCCAGCAGAAGAACCCTAGCCGGCCTTAAGGAG
ACATCTTCGAGGCTTCTTGGTCTCCGATCAATCCAGACCTTCACGCTTCCTGATCTCCCC
TATGACTACAGCGCGCTGGAGCCGGCGATCAGCGGCGAGATCATGCAGATCCATCACCAG
AAGCATCACCAGGCTTACGTCACTAATTACAACAATGCCCTCGAGCAGCTCGATCAGGCC
GTCAGCAAGGGAGACGCTTCGCGCGTCTGTTAAGTTGCAGAGCGCCATCAAGTTCAACGGC
GGAGGTTGTGTTTACTTTTCGAATCTCTGTTTTGGTGTGTTTTGATTGGTTAGTTAGGTG

ATGGGTTGTTGGATCTTGAGCTAAAGACTTGATCTTTGTGACAACTTGTGGCTTAGGAG
CTAAAGTTTTGATTTTTATGTTTGTCTTATGTCGTTGACTTTGTTGCTTATGTTGTGCA
GGTCATGTGAACCACTCTATTTTCTGGAAGAACCTTGCTCCTGTCAAGGTGAGAGCTTGT
GTTTTTTTTACTTTCTGTTTCTCCGTTTGATTGGTCTGTGTGCTTAATGGTGTGTGTGT
TTGAGTATATAATAGGAAGGTGGTGGAGAGCCACCAAGGGAGCTCTTGGTGGAGCTATT
GATACTCACTTTGGCTCTCTCGAAGGTTTGGTGAAGAAGATGAGTGCTGAAGGTGCTGCT
CTGCAAGGCTCAGGATGGGTGGTGTAGTACTCACATTGTTGGTTTTGTTGCAATAGTGATA
GTCATGGTTATTGACTTAGTTTTGTTTTGTCTTTGATTGATTTAGTGGCTCGGTTTAGACA
AAGAGCTTAAGAAGCTTGTGGTTGACACAACAGCCAATCAGGTACATATCCATGTTTTAG
ATTAGTCGGTGATATTGATATTTATAAATAAAATGTGGTAATGATGGATTTAAAGAGAGA
GAGACTGTTTGATTGATGATCTCAGGATCCACTTGTGACGAAAGGAGGAAGCTTGGTTCC
TCTGGTGGGTATTGATGTTTGGGAGCACGCCTACTACTGTCAGGTAACAACACTTGTTAA
ATAATTAGCTAGCTTATAAGATTAAAGCTTTAGTCAGCTTTTTAATCACTCGTTGCTTTCT
CTCTTGCAGTACAAGAATGTGAGGCCGGAGTATCTGAAGAACGTGTGGAAAGTGATCAAT
TGGAAATATGCAAGCGAAGTTTATGAGAAGGAGTGCAAGTGAGTTCGTTACATAAAGAGA
GGAACCAGTTCCCATCTCGGCTTTGTTTTTATAAGTTTGTCTGAAACATAAACGTACAAT
GTCTCTTTGGTCTTTGAGTTAGCTCAAATCACTCGTGTGGTTGCAATAATACACGTTGTT
TTACAAACTAATGCCTATGAGTAATATTTTTTCTGCATTCTCTATTC

>BnCSD4

TTGGTTACATAAGATGTACTAACATAACGTAATACAAATATAAGTACGAGCTCAGAACAC
AAGGCAATGATGTCATTTCTGAGGTGAGTGGCAACGATCCCACGAGCTGCATCTGCGACT
CCGACCGAGTCTTCACTCCATTTCTTCTCTTACCAAACCTCAGACATTTCCCTTTCCA
TCTTCTCACCGATCTTTGCCTAGACTTCGTTGGGGATACAAGAGAATCTTTGCTAGCTCT
CCCATGGCGTGTGTTCTCAAGGTTTGTGCTTTTAAACCATCTTCTTATGGATAACTCGG
TTTACCATATAACATTGGTTTGGTCGGATTGCATTTTTTTTTAGTTTCAGCTACTGCAGT
ATCAGAATTCAAAGGCCAGCCATCTTCGGTGTGGTTCGATTGTTCAAATTTCCATGGA
AAATGTAATAATTGAAGCCAGTTTGGTGGGTGTCTCCAGGAAAACACAGTTGGTGTAT
CAATGAGTATGGAGATCTCACAAAAGGAGCTGCTTCTACAGGGAATATATACAATCCTTT
ACAAGATGATCAAACCGCCACACAGGTTTGAACCGAACCAATCAAACCGGGGACTATTT
AAAATAAAATATAATGATATAAAATTTGCCATGTTTGTATATAAAATAGCTACCAGGCG
ACCTAGGAACGTTGGAGGCAGACCAAAATGGAGAAGCGTTATATACGGTAAAGAAAGAGA
AGATGAAGGTAACGGATCTGATTGGACGAGCTGTTGTGGTTTTATGAAACAGAGGATAGGT
CGTTACAGGGGATTACTGCTGCTGTTGTGCTAGAAGCGGAGAAGTAGGAGAGAGTTGCA
GAAAGCTTTGTTCTTGTGATGGAACCACCGTTTGGGAAGCTACTGTTTACTGAGTCATGG
CCATAAAATAATTATATATTCTAAAGTCTGAATGCAGATCCAAAAATGTTTCGTTTACAA
TTTCTTTTCTTCACATATGTTCTGTATTTTCTTATATTATGTGTGAATATATTCAAT

AAAGATCTAGTGGATTTGTGTA

>BnFSD7

GATAAGGCCACTGTCGGAATCGCAGGAGTGAAGAAGCAACTCTGTTTTCTAACAATGGCT
TCTTGTGTTGTGACGACAGGCAGTTTCTGTAGTATTACAGATTCTAGTATACGTTTGAAA
TCCTCCAAGCTTGTCCATCTGGTTCGACTCCTTAATTTGAAAATCCCCTTGTGGTTTTTG
CTTCTGTATCTTATAATCACTAAAGCTTTTGAATTTTCGTGTGTTTTTTGGTTTCTGTT
TAGAGTAATCAGCAGAGAAGACGCTCTCTTGTGTCCCGGGGCGGTTTAAAGGTTGAAGCT
TACTATGGTCTAAAGACCCCTCCTTATCCTCTGTAAAGCTTAAATGAGACAGATGCTTT
TATCTTTGTGTTGCTTATTGATTCTCAGTTTAGTATGTGTCTCTTGCTTCGGTATATCT
CTAATAATCACATAGATTGTGAAAAGTTGTTAATTTTGGGTGAAAGGTGTAGTGATCTT
AGAGAAAAAAAATTCATCTTGATCTTATTAGAACATGTTTTTGTGATATTGAATAC
AATATGTGAATTAGGATGCTTTGGAACCGTATATGAGTAAAAGAACACTAGAAGTGCATT
GGGGTAAACACCACCGAGGCTATGTAGACAATCTAAACAAACAGTTAGGGAAAGATGATA
GGCTCTATGGATACACCATGGAAGAGCTTATCAAGGCGACATACAACAACGGGAATCCTT
TGCCTGAGTTCAACAACGCTGCGCAGGTAAACTTGACTTTCTAAGCTGGCTTCTTGTATG
TACACAGTTCACCTGAGGGGGGGGGGACAACAAGCTAATGTTTGTGTTTTAAAGGTC
TATAACCATGATTTCTTCTGGGAGTCAATGCAACCTGGTGGTGGAGACATGCCTCAAAAG
GGTGTCTTGTAGCAGATTGAGAAAGATTTTGGGTCATTACGAATTCAGAGAGAAGTTT
ACTGATGCAGCTCTTACTCAGTTTGGTCTGGCTGGGCTGGCTTGTGTTGTGAGATAACT
CTACAAGCTTTTTTCACTTGTTATAGATTAACTTGAACTAAAAGAATGACTCTGAGCTTG
ATTCTCTTTTTTTTTTGGGGGGGATTTTCAGTGAAGAGGGAAGAGAGAAGACTTGAAGTG
GTGAAAACCTCAAACGCCATTAAACCCACTAGTGTGGGATGATATTGTATGTGAGAGAGTC
TCATTAGTTTTTTCTTGTATAATGTGATGTTTCTCTTGATCACATGTATTTTTTGTG
TTGTTTACAGCCAATTATCAGCTGGATGTGTGGGAGGTATAATACTATCTCCTCTCTTA
CATCAAGAAACATTTAGAAATGAATCTTGTAATATACTGCGTTTTTCATTTCTTTATCTGC
AGCACTCTTATTACCTAGACTACAAGGTAACAAGCTAGCTTCAGTTTCAACAATCTTTTG
TTTTTAATGTTTCAATTCAAGAAAAGGCTGATGAGTGTTTTTTAATGTTTCCGTGGGGTGG
TGGTGGTGGTAGAACGAGAGGGGTAGGTACATAAACTCGTTTCTGAACCATTTGGTGTG
TGAACGCTGCAATGAGTAGGATGGCACGTGCTGAGGCGTTTGTGAATCTTGGTGAACCC
AACATCCCAATTGCCTAAGCTCAAAAAAAAAAAAAAAAAAACTCTTCTCGAAGAGTCCA
TATCCTTACAAAAGGCTTTAGGCAGAGTCTAATTTTTGCAACAGGGGTCCCAACAAGA
AGCAAGTGCTTTCTCATGTGACCGATCTTTTTTAGCTTTATGTAACCGAGAG

>BnCSD1

ACACTTGTAAGATGTTTGGTACACACACACACACACACACATAAATAAATAAATAA
AAACCTCATCCCTAATTTGCCCAATCGCTTCTTCCAAACATCGAATGGCTTCTCACACCT
TCCTCTCCTTCTCATCGCTCCGCGCTCCTCGTTTCCCTCCCTCCACTCTCCGTTCCC

CTTTCGTCGGCGTCTCTCTCAACCTCCACCGTCCCCAGTCCGTTTCCTTCTCCGCCTCGA
AGAAATCGCTGACAGTCGTTTCCGCCGCGAAGAAAGCTGTCGCTGTGCTCAAGGGTAACT
CCGACGTCGAAGGAGTTGTTACTTTGACACAAGATGACTCAGGTTGGTCCCTTCCTTCTC
AATTTTCAATTTAATTTTGGTTTCTTTCAAGTTGAAATGAAATGAATGATTGGTTTGTTA
ATAATGTGATACTAAGCAGGTCCGACAAAAGTGAGTGTTTCGTATCACCGGTCTCACGCCA
GGGCCTCATGGCTTTACCTCGTGAGTTGATCTCTTTCTTCTGTTTGGTCTTTATGTAT
TGTGTCTCTTGTGTGATTCTGTTTTGCATTTTTTTCTCTTACAGCATGAGTTGGTGAT
ACAACAAATGGATGCATCTCAACAGGTGAATAATTTTGCTGCATTACACATATATATATC
ATTATTTTGTATTTAAAAAAAACACATGTCTTTAATTATCGTAGGGCCACATTTCAAC
CCTAACACATGACACACGGAGCTCCTGAAGACGAGATCCGTCATGCGGGTGACCTGGGA
AACATTATTGCCAACGCCGATGGTATATTACTTTACTCTCCATTGTTTCAAATAAATTGT
ACCATTCTCTCTAAGTACTGTTTTTTTTTTTTTTAATTGTAACAACAGGCGTGGCAGAAA
CAACACTTGTGGACAATCAGGTTATGTTTTATTCGCGTTTATGTTCTCTTATAAGAAGCT
TTTGTTTTAAATGTGAATTCATGTGTGCAGATTCTCTGACTGGTCCTAACTCTGTTGTT
GGAAGAGCCTTTGTGGTTCACGAGCTTAAGGATGACCTCGGAAAGGGTATAAACTATTAG
TGCAAAGGATGACACTTTCCAAAAGCTTATAGAAGTTTCTTAAGCAAAGATGTGGTCTGA
TTACTTCTTTTGATTTTGGCAAAATGTAGGTGGGCATGAGCTTAGCCTGACCACTGGAAA
CGCAGGCGGGAGATTGGCATGCGGTATGGTTTATCTTTTCGATCCCTACGATTTACATCTG
AAAAAAAAGCTCGCTTTTATATTAATTGTTAAAGATGCAAGTTTGAATCTATGTTTT
TGTAACCTCACGAGCTACGTTGGTTCTAACGCAGGTGTGGTTGGTTTGACGCCGCTCTAA
GTCTGGGCTAAGTAAGTACTTTGGTGTCTACTGTGTTGGTCGTCTGTCTGTTGAATCAG
ATGTCAAATAAAGTTGGCTGAATAAGCTTTTGATGTTTATGTTCTTAGCATCAAACCTC
TTTCTGGAGTTGTGCCTTTGTAAACGTGTTTGTACTTTTGGTTTACATCTGCATTGAT
CGTTTGTTTTGCTATTACTTTCCCTTTTACCAAGCTTAGATTTTGGTTTTAGGTAAAGAGG
TAAACTGATTTTAAGAGAGTTTTTTTTTATAGATGATAAGCATATTTGTTTGTTTAATGTC
CGTAAACCAAAAATGAATTTGGAATACCTCTATCACAAGTTGCTATTGTAATGAACACAC
CT

>BnCSD12

TTGGTTACATAAGATGTACTAACATAACGTAATACAAATATAAGTACGAGCTCTGAACAC
AAGGCAATGATGTCATTTCTGAGGTCAGTGGCAACGATCCCACGAGCTGCATCTGCGACT
CCGACCGAGATTTCACTCCATTCTTTCTCCTCTACCAAACCTCAGACATTCCTCTTTCCA
TCTTCTCACCGATCTTTCGCTTAGACTTCGTTGGGGTTATACGAGAATCTTTGCTAGGTCT
CCCATGGCGTGTGTTCTCAAGGTTTGTGCTTTTAGACCATCTTCTTATCAATAATTACT
CGGTTTACCATATAACATTGGTTTGGTTGGATTGCATTTTTTTTTAGTTTCAGCTACTGC
AGTATCAGAATTCAAAGGCCCAAACATCTTCGGGGTGGTTGATTGTTCAAATTTCCAT
GGAAATCGTAAGAATTGAAGCCAGTTTTGGCGGGTTGTCTCCAGGAAAACACAGTTGGTG

TATCAATGAGTATGGAGATCTCACAAAAGGAGCAGCTTCTACAGGGAATATATACAATCC
TTTACAAGATGATCAAACCGCCACACAGGTTTGAACCGAACCAATCCAAACCGGGGACAA
TTTAAAAATAAAATAATTGATTGATGATATAAAATTTGCCATGTTTGTATATATATATAG
CTACCAGGCGACCTAGGAACGTTGGAGGCAGACCAAAATGGAGAAGCGTTATATACGGTA
ACGAAAGAGAAGATGAAGGTAACGGATCTGATTGGACGAGCTGTTGTGGTTTATGAAACA
GAGGATAGGTCGTTACAGGGGATTACTGCTGCTGTTGTTGCTAGAAGCGGAGAAGTAGGA
GAGAGTTGCAGAAAGCTTTGTTCTTGTGATGGAACCACCGTTTGGGAAGCTACTGTTTAC
TGAGTGGCCATAAAAAATATATATTCTAAATCTGAATGCAGATCCAAAAATTGTTTGT
TTACAATTTTCTTTCTTCACCTATGTTCTGTGAATATATTCAATAAAGATCTAGTAGA
TTTGTGTACTCTTTTCATTTGTCTTGAGTTCTCAACTGATCAAAGAATTATAAACGTCT
TTCCGA

>BnCSD9

ATCTAGCCTCCGACAAAATCACATGATCTGTGTGGGTTTTAGTATAAGATTAAACCCCAA
AAATTAATAATAAAACCGATCACCTACCCACATTCTGACCTCGTGCCTGTCTGTCTATA
TACAACATAACAAAGTAGACAAACCAAAGCAAACACACAAAGCTCATCGAGAGAAGATTC
AGACACTTCATAGCTTCTTTATTGGGGTACCCTGAGGTACGAGTTTGATTCTGGTTTCAT
TTTCACTATGGATTTTATTTAGCTTAGATCGATTCTTCACATGGCTTCTTTAGATCGATC
ATTGACATGTTTGCATCTCTTCTGACTCTAACGCTTAGATCTTTACGGAGCTGGGTTTTTC
AGTTTTATGATTAGTAGATCTGTTGACTGACTCCTTCTCGGTTTTCTTATATGTTTACCA
ATCTTCTGAAGACAGCTTTGACCTTTTCATTTTAAAAAACTTGACGAGCTTGTTATGAA
TTTAGATGGTGGTGAACCTGATGATCTCATATCCGGTTGTGTCTAATTGATAAATATCTCT
AATGGGTTTAATCAAGATCTATTTTTCGCATCAAGCTTTGAGTTAAGACAATATGAGAGA
TTGGTTCTAAATAGGTGTGATGTTTGAACTATCTTTAGTTTCTGGATGTTTACATGT
TTTTTTGTATATATGTTGACATAAATGGTTATTTCTGTGATTTTACAGATCACAAAGGA
TAACAAACAATGGGCAAGGGAGTCGCAGTCTTGAACAGCAGTGAGGGTGTTAAGGGGACT
ATCTTCTTCAACCCAGGAAGGAGACGGTACTTTTTTATTTCAGCCTTTCAAATATTTGAAG
CCATTCTGTTTTGGTTTTACTTCTTATGAAATGATGGAAATTTTGGGTTGTTTTTTTTT
GTTTTTTGCAGGTGTGACCTCTGTGACTGGAACAGTTTCTGGACTTAAACCTGGTCTACA
TGGTTTCCATGTCCATGCTCTTGGTGACACCACTAACGGTTGCATGTCCACCGGTACTAT
TCTTGTAACCTCTGTCAAGGAACATCTTTCTGGATATTTTGATGGATAAGAACTCTAGG
AGATGATGGTGTGTGTCTACATGGTTTTCTGTATTCAACTTAACTTTTTTGTTGTTT
CATTGTTTGTTCAGGAGGTTATAATTATTTTAAATCCGGAACCTTTAAGTATTGTC
CAAGTATTTGAAACCTTTGGTCAAATCTCGTTTTCCAGGTCCACATTTCAACCCTGATGG
TAAACAACACGGTGCCCCAGAGGATGCTAATCGACATGCTGGTGATCTAGGAAACATCAT
TGTTGGAGATGATGGTATTATTTTCTCAGCATTTGTATCTCTAATGATCTCAAGCTTAT
TTAGAGCAGTTTTATATCATGCCGTTTGATATTCTCTTGCAAACGTATTTTATGCAGTCC

TAGTTTATAGTACATCTCTCATCTTTGACTAGCTTTTAGTGTTTCATGGATTAACACCATA
CCTTCTTCTTTTTTTTTTGGCTATACCAGGAAGTCCACCTTCACAATCACTGACTGCCAGG
TTCGTAGCTTTGTACCTAGTTTATGCTCTCTTGTCTTCTTACGAGACTGCTATAGTGA
ACCAAGGTTTTGTGTTCTTGTACAGATCCCTCTTAGTGGACCGAACTCTATTGTCGGAAG
GGCTGTTGTTGTCCACGCAGACCCTGACGATCTCGGAAAGGGTAATGACATTGGCTGTT
TATTTTTGTAAACATCCCTAAGTTGAATTGTCCATATGAAGACATATACGGGTCTCAACA
TCAATCCTTAGAACAATATAAACCATTGGTTTTTACATTCTCAGGGGGCCATGAACCTCAG
CTTGGCTACCGGAAACGCAGGCGGCCGTGTTGCTTGCGGTAAGTCGAAATAAACCCACAT
TTTTTCTCTCTTTTTCTGTGGCAAGTCAATGCTCATCTCATCTTTGTCTTTTACATTGA
TATTGCATTGTGGGTTAAGGCTGAAAATAAACACCTATAACATCATGTCGGTTTAGAAA
TGAATGTATCATAGTTTGGGAAGTGGCGAGAGATTAACATATCGGCTGGTGGGAATTTCAA
CCTCATTGTGATGACTTCTCAATCGATCTAATAGACTCAGAAAGGATCAACTAACTGAA
CTATGGTCTACCTTCTTGCAGGTATTATTGGTCTTCAGGGCTAAGTAAGCTGTTACTTAT
CGAGGAAGGGAGTGATGCAATAAGGAGGTCATATATACCTCTAGACCTGGCTAGTTTGTG
TGTGTATCTGTGTGTGTGTGGCTATAATCTCTCCTTTGTGGCTCAATACATTCTA

>BnFSD4

AAGGTCGGTCTCTGTCCGAGTGAAGAAGCAATTCTGTTTTCTAACAATGGCTTCTTCTTG
TGTGTGACGACAAGCAGTTTCTGTACTGTTTCAGATTCTAGTATTCGTTTGAAATCCTC
CAAGCTTGTCATCTGGTTCGTCTCCTTTATTTGAAAATCCCCTTGTTGGTTTTTGGCTTCT
GTTATCTTTTAATCACTAAAGCTTTTGAATTTTCGTGTGTTTTTGGTTTCTCTTAGAGT
AATCAGCAGAGAAGACGCTCTCTTGGGTCACGTGGTGGTTTGAAGGTTGAAGCTTACTAT
GGTCTCAAGACCCCTCCTTATCCTCTTGTAAAGTCTTTAAATGAGACAAGACGCTTTTATC
TTTGTGTTGCTTATGCTTCTTGCAGTTACATGTTCTGATGTTACTTGATCTTAGGATGCT
TTGGAACCGTATATGAGTCAAAGAACACTAGAAGTGCATTGGGGTAAACACCACCGAGGC
TACGTGGACAATCTAAACAAACAGTTAGGGAAAGATGATAAACTCTATGGATACACCATG
GAAGAGCTAATCAAGGCCACATACAACAACGGGAATCCTTTGCCTGAGTTCAACAACGCT
GCTCAGGTTTAACTTTACTTTCTAAGCTGGCTTCTTCTTCTATGTACACAAGCCAATGTT
TGTTTGTTTTAAAGGTCTATAACCATGATTTCTTCTGGGAGTCGATGCAACCTGGTGGTG
GAGACATGCCTCAAAAGGTGTTCTTGACCAGATTGAGAAAGATTTTGGGTCAATTACGA
ATTTCAAGAGAGAAGTTCACTAATGCTGCTCTTACTCAGTTTGGTCTGGCTGGGTTTGGC
TTGTTTGTGAGATAAACTCTACAAGCTTTTTTCACTTGTTATAGATTAACTGGAACTAT
AGAATGACCCCTGAGCTTAATTCTCTTTTTTTTTTGGGATTTTCAGTGAAGAGGAAGAGA
GAAGACTTGAAGTGGTGAAAACCTCAAACGCCATTAACCCACTAGTGTGGGACGATATTG
TATGTGAGAGAGAGTCTCATTAATTTTTTATTGTTATAAAGTGATGTTTCTTATTGATCA
CATGTATTTTTGTGTTGTTGTTTACAGCCAATCATCAGCTTGGATGTATGGGAGGTATA
ATACTATCTCCTCTCTTCCATCAAGAAACATTTGAAATGAATCTTCTAATATATTTTCGC

TTTCATTTTCGTTTATCTGCAGCACTCTTATTACCTAGACTACAAGGTAACAAGCTAGCTT
CAGTTTCAACGGTCTTTTGTTCCTTAATGTTAGTTCATTCAAGAAAAGGCTGATGAGTGTT
TTTTTGGTTTTTTTACCCGGGGTGGTGGTAGAACGAGAGGGGAAAGTACATAAACACGTT
TCTGAACCATTTGGTGTCTGGAACGCTGCAATGAGTAGGATGGCACGTGCTGAGGCGTT
TGTGAATCTTGGTGAACCAACATCCCAATTGCCTAAGCTCAAAAAAAGAAGAGTTACT
CTTCTCGAGAGTCCATATCCTTACAAAGCTTAGGCAGAGTCTAACTTTTGCAACAGAGG
TTCCAAACAAGAAGCAAGTACTTCTCATGTGACCGATCTTTTAGCTTTATGTAAGTGA
GAGTTCATATG

>BnCSD6

CAGACATTGATAGCTACCATCTTACTCATTTCAAAGGGGTACCCTGAGGTATGTTTAG
ATTCCCTTTTTCTCTCTGGCTTTCATTGTCACTATGGATCATTGATTGTATCATAGAT
CGATTAATCACATGGATTCTTTAGATCTATTATTCACATGTTTGCCTGAATCGTTCTAAT
CGATATATCTTTTATGGGTTTACATAAAGATCTGTTTTTTTCTTTTTGTGTGTGTCAT
CAAGCTTATATTAAGATAAGATTAGTGTTTAAATAGATGAGATCTGTTTGTAGCATCTTA
ATGTATTTGTACAACCATTGTGTATCTGGACTGTACATGTATATATATATATATGCTG
AGATGAATGATTTGTTGCGTTGATTTTACAGATCACAAAGGATATACAAAATATGGCCA
AGGGAGTTGCAGTTTGAACAGCAGTGAGGGTGTTAAGGGGACTATCTTCTCACCCAGG
AAGGAGATGGTACTTGTACTTTTTTAGAGTGGAACGCTTTAAGATATTTAAGCCATCTT
TTTTTTTTTCATTCTTTATGAAATGATTGAATCCTTGTGTGGTTTTTGTAGGTGCCACA
ACTGTGACTGGAACGTCTTAAACCTGGTCCCATGGTTTCCATGTCCATGCT
CTTGGTGACACCACCAACGGTTGCATGTCTACCGGTACGACTCTTCTACCTCTTGAAAG
GATGGCCGAGAACTTGGTGTCTACATGGTTTTTAATAATTTAAGTGAACCTCTAT
TCTAGGTCCACATTTCAACCTGATGGTAAACCCACGGTGACCTGAGGATGCTAATCG
TCATGCTGGAGATCTAGGAAACATCATTGTTGGTGATGATGGTATTTTCTTCTTCTCT
CCTCTGATCTCAATCTTCTTTAGAGCTGTTTGTAGAACGTTTCTCATCTTTAGACCATC
TTTAGTGTTACGGGTTTACACACTTCTTCTTCTTTTGTCTCTCAGGAAGTCCACC
TTCACAATCACTGACAGCCAGGTACCTATTTTACTGCTCTCTTTTGTCTTCTCTTTAC
AAAAGTCTTTTAGTGAACCAATGCATTGTTGTTCCGTCTGCAGATTCCTCTTACTGGACC
AAACTCTATTGTAGGAAGGGCTGTTGTTGTCCATGCAGAACGTGATGACCTTGGAAGGG
TGATGACCTTTGGCTATTTTATTTCCCTAAGTTACATTGTCCATATGAGGACATCTTCAA
CATCAGTCCTAAGAACACTCTCTCTAAACTCTCATTGGTGTGTAAATTTTCAGGAGGCC
ATGAACCTCAGCTTGTCTACTGGAAATGCAGGAGGCCGTGTTGCTTGTGGTAAGTAGAAAG
ACCACAATTTTTCTCAGTTTTCTTCTGTGGAACTCGTCAGTATAAAATCAATCACAAG
TTGAACCTCCTTGATTCTCTGACTATAAACTATAGGCTTGTTGGAATTCAGTCTCAGTGT
ACTATTAGACTCGGAAAGGATCAACCGACTGACGTTTGGTCTCTGCTATTTTGCAGGTAT
TATTGGTCTTCAGGGCTAAGCTGAAGCTGTTACTTTTCGAGGAAGAGAGAGAGAGAGA

GATGGAATAAGGAGGTCGTACATGACCTGGCTACTTTGTGTTTGTGTTGTGTTGGCTATA
TTCATCGAGCTTAGTGGCTCAATGCATTGGTTTAAGACAAAAAAAAAACAGAGAAAACC
TTTTTCTATTTCATGAATAACAGAGATGGTTGAAAACAATAAATATTGAATATGACAGTA
TGTGGATTATATGCAAATCTGTGAATTACATCTATTGCTAAA

>BnCSD14

AGTGACTTTGTGAATGTGAAAGGATAAAAAAACTAATGGCTTCAATTCTGCGGTCAGTG
GCAACTACTACAGCCGCCGTTGCCGCCGCTCTGCGATTCCAATCGCGATCGCCTTCTCC
TCTTCTCCTTCTCCTCCTCTACCAGATCTCAATCTACCAATCTCCTTCCCCACCGA
TCGTCTCCACGTCGCTTGGGTCTTTCACGAAGCTTCGCTAGCTCTCCGATGACGACCGTC
CCCGTTTCCGATCGTAATCTCCGTCAGGTTTGCTCAATTCGATTACAAGTTCCAATCTTT
AGCTTTGCCCTTTTCCTAATTCGATGATTTAATTAATAAAGTAGCTGACTTTTTTTGTTT
TCTTGCAAGGAGATCGAGTCATGCCTCAGCTCCTTGTAAGTCTTCTCTTGTCTATCTAG
AAACATCCCTTCAGTTACTACGAGAACTTAAGATTCATGTTGGTTGGTTGGTTGTTTCTA
GACTGAGTTCATGGTGGATATGAAGTGTGAGGTTGTGTTAACGCCGTGAAGAACAAGTT
AGAAACCGTTGAAGGTAGTTTTTTTTTAGATTTGTTATGTACAACTACTTTGTTTACGTT
CTGTTTTGGTTTTGATTTTAGTTTTAAATTTTACTCTGTTGTTGCTTGTCTGTGTGATGG
AATTGGCAAAGGGATTGAGAAAGTGGAGGTGGATTTGGCTAACCAAGTTGTGAGGATAC
TTGGATCTTCCCTGTTAAGGCTATGACTCAAGCTTTGGAGCAAACCGGTCGTAAAGCTC
GTTTGATTGGCCAAGGTGTTCTCAAGGTTAGCTATCTTTTCTCTCAGCTCTCTCATAGA
ACATGTAGGAGCTCTTAGATTGGGTTTATCTTGAAGTTTCAGTACTCATATGAACTAAAT
AACATTTACCATTTCATGTACTGTTACATTGTGACGCGTTTGGCAGACTTCTTGGTCTCG
GCTGCAGTGGCGGAGTTCAAAGGACCAGACATCTTTGGAGTTGTAAGATTGCTCAGGTC
AGTATGGAGCTCGCGAGGATCGAAGCCAACCTTTACTGGCTTGTCCCCGGGAAACACAGT
TGGTGTATCAACGAGTATGGTGATCTCACAACGGAGCAGCTAGCACTGGGAACTTGTTAC
AACCCACTTCAAGATCATACCCACACAGAGGTTCAAGCTCACTCTAAAAACATTAC
ATTGTTCTTTAAAAATTCAAAGCATTTACCGTTTGTGTTTATTTTTTTTCTTTCTGTG
AAGCCATTGGCGACCTGGGAACACTAGAGGCAGACCAAAGCGGAGAGGCGTTTACAG
GGGAAGAAAGAGAAGCTCAAGGTTGTGGATCTAATTGGGCGAGCCGTTGGTGGTTTACGAG
ACAGAGGATAAGAAGTCTGGTCCGGGATTGACAGCTGCAGTGATTGCTAGAAGCGCAGGA
GTTGGAGAAAACACTACAAGAAGCTTTGTACTTGTGATGGTACTGTCAATTGGGAAGCTACA
GACAGCGATTTTCGTTACCAGTAATTAACAATAAGATATTGACACACTACATTACGTCTT
GTAGCACTTTTGTTTTGGATCAAATTCAAAGACTCGCGAAATAATAAAAGCTTTTTCAT
TGTACCAAACCTCT

>BnCSD11

ATGTCGACCTCTCGTGCCTATATACAAGTACACAAAGACAAACCAGCAACCACAAAGCAG
CTTCTCCCCCAGATTATTCATTCCAAGGCATTTTCATCTTATTCATTCCAAGGGGTA

CCCTGAGGTATGTTTTGACTCCCTTTATTATGTCACTATGGATCATGGATGTTATCTTAG
ATTGATTAACCACATGGATTCTTTAGATCTATTATTCACATGGTTGCCTGAATCTACGCT
TAGATCTTTTCAGTAAATGCTTTTTCAAATTTTATGATCGGTGGATCTATTGATTCCCTCC
TTGTTATCTTTTGGGTAAGAAAAAAGGCTTAAGCTTTTCATTGAAAACCTGAAACAGT
TTACCAATAGAACATCCTGATGATGATCCCATGTCCAGTTTGTGATTTTTTTTCTAATC
GATAAATCTTTTATGGGTTTACATAAAGATCTGTTTTTTTTTTGTGTCTGTGCATCAAG
CTTATAATAAGATTAGTGTTTAAATAAAGGGAGCATCTTAATGTATTGTTGAACCATTT
TTTTTGTCTCTGGATTGTACATGTTGTATATATATGTTGAGATGAATGATTTGTTCTGTT
GGATTTACAGATCACAAAGGATCACAAACTATGGCCAAGGGAGTTGCAGTTCTGAACAG
CAGTGAGGGTGTTAAGGGGACCATCTTCTTCACCCATGAAGGAAACGGTACCTTTTTTAAC
AAAAAAAAAAAAACGCTTTTATTTTAAGCCATCCTTTTAACTCTTATGAAGATTGAATT
ACTGTGTTGGTGTTGCAGGTGCCACTACTGTGACAGGAACTGTTTCTGGCCTTAAACCTG
GTCTCCATGGTTTCCATGTCCATGCTCTTGGTGACACCACTAACGGTTGCATGTCTACCG
GTACTACTCTTCTGCCTCTTGTAACCTAACCTGGAATTTTTGTTATGGCTAAGAACTT
TAAGAGATGAAGATGATGGTGTTTTGTCTACATGGTTTTGAATCATCTAATTGAACTTTT
TTTGTGTTGTTTATGTTCCTAATCCGGAGCTGTAATTTTTTCTGTCAAAGTCTTGTTAAT
CCTTGGGTCAATCTTCTATTCTAGGTCCACATTTCAACCCCTGATGGTAAAACCTCACGGTG
CACCGGAGGATGCTAATCGTCATGCTGGCGATCTAGGAAACATCATTGTTGGGGATGATG
GTATTTTTTTCTTTTCTTCTTCTCTCTGATCTCAAGCTTCTTTAGAGCTGTTTTG
TAGAACGTTTCTCATCTTTAGACCAGCTTTAGTGTTTCATGGGTTTACACAAAATCTTCTT
CTTCTTTTTTGCTGTCTCAGGAACTGCCACCTTCACAATCACTGACAGCCAGGTTCTAG
CTCTGTTACCTATTTTATCTCTCTTTTTTTTTTCTTTTACGAAACTGCTTTAGTGAAC
CAATTTGTTGTGTTGTTCCACAGATTCCCCCTAGTGGTCCAACTCTATTGTCGGAAGG
GCCGTTGTTGTCCACGCAGACCCCTGATGACCTCGGAAAGGTAATGACCTATGGCTATTT
AAGATCCTTTTTACATTCTCCATATGAGGACATCTACTGGACTCAACATCCATCCTAACA
ACACTATCTAACTCTCATTGGATATTTAAATTTTTCAGGAGGCCATGAACCTCAGCTTGT
CTACTGGAACGCAGCGCGCGTGTGCTTGTGGTAAGTAGAGCTAAACCATTTTTCTCA
CCTTTTTTGTGTTGGATTCTCTCTGGCAACTCAACGCTCGCCTTGGTAGACTACAGATAA
AACTACTATAGGCTTGTGGGAATTTAGTCTCAATCTTGATGACTTCTCATTCGATCTACT
AATAGACTTAGAAAGGATCAACTGATTGAACCTTGGTTACTACCATTTTGCAGGTATTAT
TGGTCTTCAGGGCTAAGCTGTTGCTTTTCGACGAAGAGAGTGATGTAATAAGGAGGTTTCG
ACCTCTAGACATGGCTAGTTTGTGTATCTTTGGTGTGTGTGTGTGGCTGTAATAATTG
AGCTTAGTGGCTCATTGCTTTTGGTTTAAGACGAAAGAACACATAATGTTTTCTGTTTCA
TGAATAACAGAGATGGTTGAAAAACAATAAAATAATATTGATATGATAGTATGTGGTGTAG
ATGCAAAATATTTGAAATACATCTATTGCTAAACTTGA

>BnFSD5

ATGGCTTCTTGTCTTGTGACGACAAGCAGTTTCTGTACTGTTTCAGATTCTAGTATACGT
TTGAAATCCTCCAAGCTTGTCCATCTGGTTCGGTTCCTTACTGAGACATTGAAACCCCC
TTTGGTTTCAC TTCATATTGAATCTGTTATCAAGCTTTTGAATTTCTTTTTTTTTTTGG
TTTCTGTTTAGAGTAATCAGCAGAGAAGACGCTCTCTTGGTTCACGAGGTGGTTTAAAGG
TTGAAGCTTACTATGGCCTAAAGACCCCTCCTTATCCTCTTGTAAAGTTACTATGGTCTA
AATATATCTCATTGCTTATAGATTCTCAGTTTAGTTTGTGTCTTATGCTTCTGTAATACA
TTTGATGTTCTGTAATAAGCACATAAATGGTGGAAAGTTGGTTAAACATTAGTCTAAAAC
AAATATTGTGAATTAGGATGCTTTGGAACCGTACATGAGCCAAAGAACACTAGAAGTGCA
TTGGGGAAAACACCACCGAGGCTACGTGGACAATCTAAACAAACAGTTAGGGAAAAGATGA
TAGACTCTATGGATACCCATGGAAGAGCTTATCAAGGCCACATACAACAACGGGAATCC
TTTGCCTGAGTTCAACAACGCTGCACAGGTTATAACTTTTACTTTCTTAACCTGTTTGGT
TGTACACTTCATCCCAAGGCAACAAGCTCTGATGTTGGCAAGGTTTGTGTTGTTTTTAA
AGGTTTATAACCATGATTCTTCTGGGAGTCAATGCAACCTGGTGGTGGAGATGTGCCTA
TAAAAGGTGTTCTTGAGCAGATTGAGAAAGATTTTGGGTCGTTTACGAATTTTCAAGAGA
AGTTTACTAATGCTGCTCTTACTCAGTTTGGTCTGGCTGGGTCTGGCTTGTGTTGAGA
TACTCTGCAAAGCTTTTCACTTTGTTGTAAATTTACTATAGAATGACCCTGAAAATGCAA
ATCTTGATTCTCTTTTTTTTTTTCAGTGAAGAGGGAAGAGAGGAGACTTGAAGTGGTGAAAA
CCTCAAACGCCATTAACCCACTTGTGTGGGATGATATTGTATGTGAAGAGTCTCATTAGT
TTTTTCTTGTTATATACACTCTGATGTTTCTACTTGATCACATCTCTTTTTTGTGTTTA
CAGCCAATCATCAACTTGGATGTGTGGGAGGTAATAATACTCTCTCCTCTCTATTACCTT
ATACTCATATGAAAACAAAAATGAATCTTCTAATTTATTTGGTCTTCATCTCTTTACTTT
GCAGCACTCTTATTATCTGGACTACAAGGTAAAAAATACTAGCTTCAGTTTGTGTTTC
TTGATGTTTCGTTCAAAAAAGGCTAATGTGTGTTTTTATTCTTATTCTTGGGTGGTAGA
ACGAGAGGGCTAAGTACATAAACACGTTTCTGAACCATTGTTGTGCGTGAACGCTGCCA
TGAGTAGGATGGCACGTGCTGAGGCCTTTGTGAATCTTGGTGAACCACCATCCCAATTG
CTTAA

>BnCSD3

TAAAGGTAGTGACTTTGTGAATGTGAAAGGATAAAAATAAAATAAAAAGCTGAAGAAGGA
AAGCAATGGCATCATTTCTGCGGTCAAGTGGCAACGACTACAGCCGCCGTAGCCGCCGCGT
CTGCGATTCCAATCGCGATCGCCCTCTCCTCTTCTCTCATCTTCTCTACTAAATCCCAAT
CTCCCAATCTCTCCTTCTCTCCCGATCGTCTCCACGTCGCTTGGGGCTTTCACGAAGCT
TCGCTAGCTCTCCGATGACGACCGTCCCGTTTCCGATCGTAATCTCCGTCAAGTTTGCT
CAATTCATTATACAAGTTTCAATCTTTAGCTTTGCCCTTTTCTTAATTCGATGGTTTAATT
AATAAAGTAGCTGACTTTTTTTGTTTTCTTGCAGGAGGATCGAGTCATGCCTCAGCTTCT
TGTAAGTCTTTCTTTTACTCTCTAGAAACATCACTTCAGTTACTACAAGAACTTAAGAT
TCAGATACTGAGAGCTTATGTTGGTTGGTTGTTTCTAGACTGAGTTCATGGTGGATATGA

AGTGTGAGGGTTGTGTTAACGCCGTGAAGAACAAGTTAGAACTGTTGAAGGTAGTTTCT
TTTTGAGTTTATTTAAGTTCTGTTCTTTTGGTTTATTTAAGTTCTTGTGCTTGTGCG
TGTGTGATGGAATTGGCAAAAGGGATTGAGAAAGTGGAGGTGGATCTGCCTAACCAAGTT
GTGAGGATACTTGGATCTTCTCCTGTTAAGGCTATGACTCAAGCTTTGGAGCAAACCGGT
CGTAAAGCTCGTTTGATTGGCCAAGGTGTTCTCAAGGTTAGCTATCTTTTCTCTCAGCT
CTCTCATAGAACCTGTAGGAGCTCTTAGATTGGTTTATGTGAAGTGTCTTTCCATCGATA
ACATGTACTTTGTGACGTGTTTGGCAGACTTCTTGGTCTCGGCTGCAGTGGCGGAGTTCA
AAGGACCAGACATCTTTGGGGTGGTTAGATTTGCTCAGGTCAGTATGGAGCTCGCGAGGA
TTGAAGCCAACCTTACTGGCTTGTCTCCCGGTAAACACAGTTGGTGTATCAACGAGTATG
GAGATCTCACAACCGAGCAGCCAGCACCGGGAACTTGTACAACCCACTTCAAGATCATA
CCCACACAGAGGTTTGTCAAGCTCACTCTAAAAACATCACATTGTTCTTTAAAAATTCA
AAAGTATTACCGTTTGTGTTTCTTCTGTGAAGCCATTGGGCGGCCTGGGAACAC
TAGAGGCAGACCAAAGCGGAGAGGCGTTTACACGGGGAAGAAAGAGAAGCTCAAGGTTG
TGGATCTAATTGGGAGAGCCGTGGTGGTTACAAGACAGAGGATAAGAACTCAGGGCCTG
GATTAACAGCTGCAGTGATTGCTAGAAGCGCAGGAGTTGGAGAAAACATAAGAAGCTTT
GTACTTGTGATGGTACTGTCAATTGGGAAGCTACAGACAGCGATTTGTTACAGTAATT
AAACAATAAGATATTGAGACTACATTACGTCTTGTAGCACTTTAAGACTTTGTTTGGTT
CAAATTCAAAGACTGTCTTGAACAATAAAAGCTTCTTGTATTGTACCAAACCTGACTTA
ACAGCTTAGCAAGGCCAAGAGCTTGGCAGTTTGTATTTAATCTAGAAAGATGGTTGTTAG
TTGAGTACACAAGAGGTTTCGTGGTGTAGTTGGTTATCACGTCAGTCTAATACACTGAAG
GTCTCCGGTTCGAACCCGGGCGAAGCCA

>BnCSD7

CCAAACACACAGACAGAACAGATGGGAGGTCCCTAATCTGAGAGCGGTGGCTCTTATCGCC
GGCGATAAAAACATCCGAGGATGTCTTCAATTCACACAAGACACTTCCGGTGATCTGTTT
TTTCTTCTTTTATTGGCCGTCGGATATGTTTTATTTCATTCTCTTGTATTGATTTTGT
TTTGTGTGGCAGGGACAACCTCATGTAACAGGAAAGATCTCAGGACTGTCTCCTGGCTTCC
ATGGCTTTCATATTAACCTCTTTTGGTGATACCACAAATGGCTGCAACTCTACTGGTTGGT
TTTTGTTCACTCTTTGTCTATGTAAGTGTACACTTGGAGCTCAAGATTAAGTCCTTGACC
GTTGTTTCTCTTTAAGAATCTAATGGTCTGTATCTGAAACACACACATACATGTGAAAA
GAGTTATTTTGTCTGACCTTGATGTTAACTGGATTGGTTTGGATCAGATTTAGTTTAGAT
GGATGGACTATTAGTGTGCCAGTAGAATTCAAGGAACCATTTAGATTAAGCTACTTTTA
GAAGCTAAAACATATTAAATTTAATTTAATAGAAGATGTTTTGAGTGGTGTCTCTCCTC
TTTGTGATTCTGTGTTGAGTTCTGTACTTAGTGTGTTTTGTTTTCTGTGGAAACGTT
GACTTCAGGACCTCACTTCAATCCATTAAATCGAGTTCATGGGCCACCGGATGAGGAAGA
GCGTCATGCTGGAGATTGGGTAACATTTTCGCTGGATCAGACGGTATACGCTTTTTTCC
TCAATCTATATATTTATTTGTGCTTTTTTGAAGAATGATGTAGTGTTTTTTGGGGTGA

GCCTTGCTTGTTCAGGTGTTGCTGAAATCTCGATCAAAGACAAACAGGTAAACGGATCT
TCCTTTTTTACTTCTTCAACCATTTAATGTAAAGTACATATTATCACATTGTGCTTATGT
CTCTCCCATTTATCTCGGCTTCTCTATGATTTACCAGATACCACTTAGTGGGCAGTATT
CCATACCTGGGAGGGCGGTTGTTGTATATGGTGATCCTGATGACCTTGGCAGAGGTAGTA
ACACTTCTTTATAGCCTTTCCAAATATACATAAATGGTCCAATGTCACCTACTATATAAA
AAGAAGCAATAGAAGTTTCAGGGTCAAATCTCAGTAGTAATCATTGTGTAGTTTCATTTA
GTTGTCAACTTATTATCATCAAGTATCTGCCACAGTTTTTAGGTTTCATGTTGTGCTCTGT
TGATTATGTTAAATTAAAGAATTATGATTTCTTTGCGGTTTGTACCGTGCAGGAGGACA
CAAGCTTAGCAAATCAACAGGAAACGCGAGGCGACGAGTTGGATGCGGTATTGCTTTCTA
ACCTTTTGGAAAAACAGAGCAACACCATTATTCTCTTTTTTCCAGTGTGTCAAGTAACT
CACTCTAGATTTTGATGTTGACCCAGGTATTATCGGACTTCAAGCAGCTGTGGATCCTAA
ACTATAGTTTTGGATATCAATGAACTATCGGCAGCAGAGCCCACTCAGTTTTTCAAATG
TGTACATCAGAGGCCATGGTTTGTATATTATTGACATTCTGTATGAGACGTAAGGCATAA
TAATGTATATTGACATACTGTTTGAGACGCAAGTCATAATAATGTAATACGTGAATTCAA
GTTATCTTTAAA

>BnFSD10

GATAAGGTCTCCATAGCAGAAGCGTGATTCTGGCGGCGATAGTGAGGAAACTAACAATGG
CTTCTTGCTTGTGACGACAAGCAGTTTCTGTACTGTTTCAGATTCTAGTATACGTTTGA
AATCCTCCAAGCTTGTCCATCTGGTTCGGTTCCTTACTGAGACATTGAAACCCCTTTGG
TTTCACCTCATATTGAATCTGTTATCAAGCTTTTGAATTTTCATTCTTTTTTGGTTTCTG
TTTAGAGTAATCAACGCTCTCTTGGTTCACGAGGTGGTTTAAAGGTTGAAGCTTACTATG
GCCTAAAGACCCCTCCTTATCCTCTTGTAAGTTTACTATTGGTCTAAATATATCTCATTG
CATATAGATTCTCAGTTTAGTTTGTGTCTAATGCTTCTGTAATACTTCTGTAGTACATTT
GATGTTCTGTAATAAGCACATAAATGGTGGAAAGTTGGTTACTTGGGGTGAAGTGTCTTA
GTAATCTTAGGGAAAATTGCATCTTGATCTGAGGGCCTCTTGTGATATCCCAAAGACAT
GTTTGTGTTAGATATTCTAAAAACAATCTTCTAAAATCGGTTTAGACCTCATAGTCGGCA
AATTGGGTCTGAACGAAACAATCGTTCAAACCTATTTTAAAAAATCGGTGATAATAGGT
AGGAGCATAAACTGAAACATTCTGGAGCTACAAAGATAGTTATTAAATCGTTAGCACCAC
ATAAAAACATTCTCTAGAGTAGCTGTTAATACGAATAACAGAACTCTGTTATAGCCA
TTTCTGTACATTCAATGTACTCTACGGATAGAGGAATACAGAGAGTTGAACATAGTAAAA
TCAGAAACTGTTTTATAGTTATAGTATGTTCGAACGTGGAATTCATCATCCATTTAGTCA
TTTTCAAATCCCTTTTATTCGTTTAAATAGTCGAAAGAAAAAATAGAGCGTTCAAAAA
ATCGGTTTAGGGCTCCGCTGCTATAAAGCGCCTAGCCACTGCCTAGCCCTTGTCTAAAA
CAATATTGTGAATTAGGATGCTTTGGAACCGTACATGAGCCAAAGAACTAGAAAGTGCA
TTGGGGTAAACACCACCGAGGCTACGTGGACAATCTAAACAAACAGTTAGGGAAAGATGA
TAGACTCTATGGATACCCATGGAGGAGCTTATCAAGGCCACATACAACAACGGGAATCC

TTTGCCTGAGTTCAACAACGCTGCACAGGTTAATAACTTTTACTTTCTTAACCTGTTTGG
TTGTACACATCATCCCCAGGCAACAAGCTCTGATGTTGGCAAGGTTTGTGTTGTTTTT
TTTAAAGGTTTATAACCATGATTCTTCTGGGAGTCTATGCAACCTGGTGGCGGAGACGT
GCCTATAAAGGGTGTCTTGAGCAGATTGAGAAAGATTTTGGGTCGTTACGAATTTAG
AGAGAAGTTTACTAATGCTGCTCTTACTCAGTTTGGCTCTGGCTGGGTTTGGCTTGTTG
TGAGATTCTCTGCAAAGCTTTTCACTTGTGTGTAATTTACTATAGAATGACCCTGAAAA
TGGAATCTTGATTTTCTTTTGTTCAGTGAAGAGGGAAGAGAGAAGGCTTGAAGTGGTG
AAAACATCAAACGCCATTAAACCACTTGTGTGGGACGATATTGTATGTGAAGAGTCTCAT
TAGTTTTTCTTGTATATACTCTGATGTTTCTACTTGATCACATCTCTTTTTTTTGTGT
TGTTTACAGCCAATCATCAACTTGGATGTGTGGGAGGTAATAACTCTCTCCTCTCTAT
TACCTTATACTCATAAGTAACACTTTGAAAACAAAAATGAATCTTCTAATTACTTTTCGTT
TTCATCTTTTACTTTGCAGCACTCTTATTATCTGGACTACAAGGTAAAAAAAATACTAG
CTTCAGTTTGTGTTCTTGATGTTTCGTTCAAAAAAGGCTAATGTGTGTTTTATTTTAA
TTCTTGGGGTGGTAGAACGAGAGGGGTAAGTACATAAACACGTTTCTGAACCATTGGTG
TCGTGGAACGCTGCCATGAGTCGGATGGCACGTGCTGAGGCCTTTGTGAATCTTGGCGAG
CCCAACATCCCAATTGCTTAATAAAAGATCAACCACCAAGAGGAGCATCAGAGACTTGTT
ACTCACGGTGTGCGTAGACTAATGAGGAATCCGAGTTGCTGCGTAGATAAATACAGTATG
ATGAGTATTTTCTGAAGCAGTTTTTTTGCAGTTGAGTAGAGTATGGAGAGAGTGTGCTT
CTGGTGTGTTGTTTTTTTTTGTACTCTTGAGACTTAAAAACATAAAGAGTTGTATTACA
ACACTTCTATTAGAAAGGTTCTTAGCTTAGGTA

>BnFSD3

AAGACAGAGAGATCGTTGACGTGTGTTCTCCTGACTTGCCCTGAAACTTTGAGGTTCTGA
TTTTATCTTATGGTCCACTCTGTAGCTTCCTGTTCAGTTTTGCTCATCTCTTACTTAAG
TTTAATTTGTATATCGATCTATCTATGTGTTTTATGTGTGTTGTAAGAATATTGATTC
ATTAATGACCATCTCTCGATGCTATGTTGTTTGAATGTGCAGATTGTATTATAAAAGGA
ATGGCTGCTTCAAGTGTGTAACCGCTGATTACGTTCTCAAGCCACCTCCATACTCTCTG
GTATGATTTCATTTATTCATGGTGAGAACGGTCAAGTAGGGTGTTCACGTCGGATTTGGG
GACTGTTAAAAGCATAAAATTTAACTTGGGGACCAAGAAAATTGTTCTCTGTGTTCTTTC
CTTAGAGGACCTATTGGAAAAGTTTGGAGTGTATGTTTAAGTGATAGCGATTTTGATGA
AATATTGTTTGGGGCAAAAATTGAAAGGATGCTTTGGAGCCGCATATGAGCCGACAACT
CTGGAGTTTCACTGGGGAAAGCATCACAGGGCTTACGTGGACAACCTCAAAAAACAAGTA
CTTGGATCCGAGCTTGAAGGCAAGACCTTAGACCACATCATCTCAACACTTACAACAAT
GGCGACCTACTCCATGCTTTCAACAACGCTGCTCAGGTAACAATATAAACCCAATATCTT
ATTTGGGCTTTTAAAAGGGTGTATGATTGTTTAGCTGATTCGGTGATGTGTATATATGTA
GGCATGGAACCACGAGTCTTCTGGGAATCAATGAAACCAGGAGGTGGTGGAAAACCATC
AGGAGAACTTCTTGCTCTGCTTGAAAGAGATTTCACTTCTTATGAGAAGTTTATGATGA

GTTCAATGCTGCTGCTGCCACTCAATTCGGAGCTGGCTGGGCCTGGCTTGCTTGTAAGTT
GACTGATCTCAGTTTTTTTTCCCTTCAAATGTTGAACAGCTTCACATAAATATTTTAATC
TCTTTCCTTACTCTTCTCCAGACGCAGATAACAAACTCAAAGTAATGAAACTCCAAAT
GCTGTGAATCCCCTTGCTTGCTTCTTTGTAAGTATTCCAATCAAGAACTGAATACA
GAGTTAACTTGATTAGAAATCATCTTACAATTATTACATATTCTTAAAAAATAATCATGG
TGTTGATTTCCTGCAGCCATTGCTTACCATTGACGTCTGGGAGGTATAGTAAATACTTTA
TAGCCCATATCAAATACAGTTTTTGTCTAGTTTATGCTACAATTTTATTTTTTTCTTGG
TTATTTGGCAAATAAGCCCATAGTTTATGCTACAAATTTATGATCTCTTTCTGTAATC
TTCAATTTGCTACATGGAACAGCATGCTTACTATCTAGACTTTCAGGTATAATGTAATAT
TATAACGGTTCTTTTTAGTTTTTTTTTTTGTGGATTGTTGTAATTTTTTATTTGTATG
TGAGCAGAATCGAAGACCGGATTACATAAAGACATTGATGAACAATCTGTGTCTTGGGA
GGCTGTTAGTTCCAGACTTCACGCTGCCAAGGCTGCTTCTTCCTCTTCTGCTTAAGCAGG
AATCAACAGACATTTTCGTACCACCTCTCT

>BnFSD2

GACTTGATAGAGATATGATGTCAACTGGGTGGATTCTAGAGTCATAGATCTGGAAGATCC
TTGCAGTGTACCCGGTCTCATCTGACTAGGTAAGCGCTCAGTTTGTGAATATTTCCCAAA
GAAGACCTCCTGTTGATGCCAAAGTCAATAATCCGTATAGTGATGATAAAACAAATTTG
TATAAAATAGCCCATTTGGTCACGGACGGGTGAACAAAAAATAAAGATCACTAACTAGAGA
TTACTCCATTATTTAAATTAAATTGCGCTAATAAAAGTCTGAGCATGGAATAAATTACAG
TACGTAGCATAATAGCCTGAGATAAGAAGGTTCACTTATCCAGACAGAGAGGAGAAACCT
CTGTATACTCATATTGCAGGCCATAAATCAATGATGATGACAACCACTTCCTCGTTGCTC
TCGCCGTGCTCTCTGCTTCTTCAAGGTTTCTCCTTTCTATCTCTCTTATCTCTCCA
TCTCTCTCTCTCACTCACTATTAGTTTTTTTTTCTTTTTTTTAACAGGGCCAAACCGGC
AAACGCAATGAAAAGACACGAAAAGGTTCTGTCTTTCAGCCTCTCTTGTCTCTCTAAAT
CAACTGTTAAATTCTATATGAATGGAGCTCTCGTTTCAGTAATAAGACAGAGCAAGGCAC
CATGCATATGTAGTGTTCGATGAAATGCTTGACTGAATCTTGAACCTGTTTTTTATTTAA
TGGCGCAGAGACAGTTCTCGAGAAAGGTAGCTGTTTCTGGTGTGTCAGAGCGGGATTG
AGCTTAAGCCACCTCCCTATCCTCTGTGACGTTTTTCGTTATCAAGACCCACCCAGCTTT
TCGATTTTAATTTTGGTTGATAGATTATGCACATCATGTGGTAAAGAATACTGTATTAGT
ACAAATCTTTGAAGGTTGCTCTAATATGGTAGTTATGATGATGAAATGTTATGAATGTT
AAAAGTGCAACGAAGCGTGAAGGGGAGATGTTGCTCGCTCACTCTGTGTCTGTCTGTCTG
TCTTTGGCAGGATGCTCTAGAACCGCATATGAGCCGGGAAACAATGGATTATCATTGGGG
CAAGCATCACAGAACTTACGTTGAGAACCTGAACAAGCAAATCCTAGGCACAGATCTAGA
TGGATTGTCATTGGAAGAGGTTGTGCTTCTTTCATACAACAGAGGCAATATGCTTCCTGC
CTTCAACAACGCCGCACAGGTAAATAATGCCATATATCGGTTTTACCGTTTTCTTACCAA
GGGGATTGGATGTGAGCTAAGGTATATATGAGGAGGGGCTTTGCAGGCATGGAACCATGA

GTTCTTCTGGGAGTCTATCCAACCTGGAGGTGGAGGAAAGCCAAGTGGAGATCTCCTCAG
ACTGATAGAGAGAGATTTTGGGTCTTTTGATGACTTTTGTAGAAAAGTTCAAGGCAGCTGC
AGCCTCCAACCTTCGGTTCTGGTTGGACTTGGCTTGCATGTGAGTGTTCACCTATGCG
TTCCCTTACCCTATTGAAAAATGCAAACCACTTACTAAGGGTATCCACTGATG
CAGACAAGGCGAACAGACTTGACGTTGCAAATGCAGTAAACCGCTTCCAAAGGAGGAAG
ACAAGAAGCTTGTGATAGTAAAACTCCCAATGCAGTGAATCCACTCGTGTGGGACTATT
CTGTAAGTGTCTAACTTCCAAAAATGCTGTTGTTAGGTAGGTATTTAATTTCTCTCA
CGTTTTGTCCATCTGTTTATATGCAGCCACTTCTCACCATTGATACATGGGAGGTATAAC
ATAAGCTACTCATCTTTCACTCTATGAATTTACCTTGGTTTCTTGATCCCTGACTTAGT
TTTCTTCTTGCTCTTTCTGCAAAACAGCACGCTTACTATCTGGATTTTGAGGTACCTTC
AAAATGTTCTCACAATTAAGTAAAGCCGAGGTCTCAGTTCTCATGTTGTTGTTTGT
CGCAGAACCGAAGAGTCAATACATAAATACATTCATGAAAAGCTTGTGTCATGGGAAA
CTGTAAGCACAAGGCTAGAATCTGCAATGGCTCGAGCAGCTCAAAGAGAACAAGAAGGAA
CTGATACAGAAGATGAAGAGAATCCAGATGATGAAGAGCCAGAGGTTTACTTAGATGATG
CATCTGAGGAGGTTGACTAA

>BnFSD6

ACAGATACCATTGGCGTGTGCTCTCCTCACTTGCTTGAACCAAGAGGTTCTGTCTGATT
CCCTATCTCTGATCCACTTTGTTGCTTCTGTTCAAGTTTTGCTGATCTCTTACTCTTTG
TTCCTAGAACCTTCATTTTAATTTAGTTTTGTATATATCGATCTATGTTTCTGTGATTG
TAGCGATATTGACTAATTTCTGGGACATCTCGATGTTACGTTGTCTGAAATGTGCAGCTT
CATTCCTCAAAGAGAAATGGCTGCTTCAGCTGCTGTAACCGCAAACCTACGTCCTTAAGCC
ACCTCCATACCCTCTGGTATGATTTAGTTTTATCTGTTTCTTCAAATCAATTGGTATTGT
CTTGTCAAATGTCATTTTGTGTTGGTGGGATTATATGATTAGGTGATAACTGTTATTC
CCACACTAGCCATCAAATTACATTTTATCCTCGTCAAAGGCGTTACAAATGAACTCATCT
AATTAAATGGACATAGTCAAACATATAAGTGTTTAACAAAATTGTTGTTGGTATTAGTT
CAAATAAGACCATGGATATTGTAAGACTTCGTGACCAATAAAATTGTTCTTGGTCTGAT
CTTAGTGATTCTTCCTTAGTGGACCTATTGGAATGTACCTAGTAGTATTAATGTTTGA
GTGAGAGTAAATTGATGAAATGTTGTTGGTATAATATTGGAACAAAGGATGCTTTG
GAGCCGCATATGAGCAACAACTCTGGAGTTTCACTGGGGAAAACATCACAGAGCTTAT
GTGGACAACCTCAAGAAACAGGTTCTTGGATCCGAGCTTGAAGGCAAGCCCTTGGAGCAT
ATCATCCAAAACCTTACAACAACGGCGACCTCCTCCCTCCTTCAACAACGCTGCTCAG
GTAATAAAGTTGATTTTGTGCTATTAAGGGTGTGTGATTGTTTAGCTTATCCAATTAA
TGATGTATATAGCGTGGAAACACGAGTTCTTCTGGGGATCAATGAAACCGGTGGTGA
GGAAAACCATCAGGAGAGCTTCTTGCTCTGCTTGAAGAGATTTCATTCTTATGAGAAG
TTCTATGATGAGTTCAATGCTGCTGCCGCCACTCAGTTGGAGCTGGCTGGGCCTGGCTT
GCTTGTAAGTTGATGGATTCACTTTTTTTTTTCCCTTCGAGTGATTGATGAAAGAGCT

TCACATAACTATTTTGATTTTGTTCCTAACTCGTCTTATATCTCTTTCAGACGCAGACAA
CAAACCTCAAAGTAGTGAAAACCTCCAATGCTGTGAACCCCTTGTGCTTGGCTCTTTTCGC
AAGTTTTTTTTTAACCATGAACCTGAATACAGAGTTTCACTTGATTAATAAATCAACTGAAC
TAATGATTACAAGTCCTTCAAACCTAATCTTGGTTGTTATTTCTTGCAGCCATTGCTTACC
ATTGATGTCTGGGAGGTAAAATAAACACTTTTATAACAGATACCATATAAAATATTTGCC
TTTGGACCTATAAAATTTTGTGCTGATCTCTTCTTTCTCCTTTTGCAACAACAAACAGCA
TGCATACTATCTCGACTTCCAGGTAATAATATTTTCATCATAGCGGTCAATTTTTGTTC
TTTGCCAGTATCTTCTTTTGTGATTGTTGTAATATTTTGTATATGAGCAGAACCGCA
GACCGGATTACATAAAGACATTCATGAACAATCTTGTGTCTTGGGAGGCTGTTAGTTCCA
GACTTGAGGCTGCCAAAGCTGCTTCTTCTGAGTCATCATCAGATATATTCGGACCAAAA
TCTGACTTCAGTTGTGTATATTATGCATTACTGAAGTTCTTAATAAAATATTTGGTCGCG
GTTATAAGGACACTGCTCTCCTGTTGTAATGTCTCATCGAGTCTTTCATCTGTTTCTGT
TTACTGAGATTTTAATCATCGTGTAATAAAGAACTACCATGTTCTCTTCTTTGTGTGGTT
TGGTTTTTATCTATTTATCTTTTTGTGTGCAAGGCCTACCCATATACGGATTATGGCACG
TTAGAAACACTACTATAGACTCTCGTGGAGAAAATGCTTAAACATTATTACACCTACCT
ACCAACCATACACAAGCCACGAGTGTTCGATGGATGGCGTGGAGTAGAAAGGCCTATCA
CAGACCTTGCAATGTTTATACTCCCTTCGTATAGCCATAATGGGCCGACCAATACCGCCTA
ACCAATATTTGAGGGTAGAAAAATG

>BnCSD8

CACACACACAACAAATAAATAAAACCTCATCCCTAATTTTCCCAATCGCTTCTTC
GAAACGCCAAAAGAGCAACAACATCCAATGGCTTCTCACACCTTCTCTCCTTCTCATCG
CCTCCGCGCTCCTCGTTTCCCTCCGTCCTCCTCTCCTTTTCGGCGCGTCTCT
CTCAACCTCCACCGTCCCCAGTCTGTTTCTTCCCGGCTCGAAGAAATCGCTGACAGTC
GTTTCCGCGCGAAGAAAGCTGTTGCTGTGCTCAAGGGTAACCTCCGACGTGAAGGAGTT
GTTACTTTGACACAAGAAGACACAGGTACGCCCCTTCTTCTCAATTTTCAATCTGATGT
GTTGTGTATTATTAGCTCACTGCTTAGTGTTCGATAATATGTAATAATTTCTCAAT
TTTCACCAAGATTCCATACTTTTCTAGCAAATGACTGTTTGAGATTAACTTAAGAATGTT
TATTTAACTTTTATCCGTTGGGATTAGTTGTAGCTAAACATCATTGTTGTGAATCAAG
GATAGTGTCTAAAAGTCGGTCCAGGCCACGGCTAGGCATTCTACTAGTGGCAAATCGG
ACCTAAACGAAACATTTTTTTAGAAAGGCTAGCGATTCTTGAATGTTGATATCTTTCA
ATCTAATTTGGTTTCTTTTCGAGTTGATTAAGCAGGTCCTACAAAAGTGAGTGTTCGTATC
ACCGGTCTCACACCAGGGCCTCATGGCTTTTACCTCGTGAGTTGTTCTTCCCTACTTTA
TCGATCTCTTTCTTCTTGTGTTTGGTCTTTATGTAATGTCTCTGTGTAATTATCTGTTT
TGCATTTTTTTTTTACAGCATGAGTTTGGTGATACACAAATGGATGCATCTCAACAGG
TGAATCATTTTGTGTCATTACCCATATATCATTTTGTATTTTAAAAAAAAAACACA
TGTCTTTAATTTATCGTAGGGCCACATTTCAACCTAACACATGACACACGGAGCTCCT

CTTTACTGGCTTGTCTCCCGGAAACCACAGTTGGTCTATCAACGAGTATGGAGATCTCAC
AAACGGAGCAGCTAGCACAGGGAACCTGTACAACCCATTTCAAGATCACACAATCACAGA
GGTTCCTCAAGCCCACTCTTAAAAAAAACATCAAATATCATCACTATTTCTCTTATAAC
CATTTTGTTTTTTTTTCTGACAGCCATTGGGCGACCTGGGAACACTAGAGGCAGACCAA
AGCGGAGAGGCGTTTTACTCCGGAAAGAAAGAGAAGCTCAAGGTTGCTGATCTTATAGGG
AGAGCTGTGGTGGTTTACAAGACAGAGGATAAGAAGTCAGGACCGGGATTGACAGCTGCA
GTGATTGCTAGAAGTGCAGGAGTTGGAGAAACTACAAAAAGCTTTGTACTTGTGATGGT
ACTGTCATTTGGGAAGCTACAAACAGTGATTTTGTGACCAGTAAGGTTTAGTAACAGTAA
TAAAAGTGGACACTACATTACGTGTTGTAGCAACTAATAAGTCTTTGTTTTGGATCAAAA
TTTAAGTGC GACTTCAA

>BnMSD2

ATGGCGATTCTGTCTGTATTGAGCAGAAGAACCCTATCCAGCCTAAAGGAGTCGTCTTCT
AAGCTTCTGGGACTCAGAGGAATCCAGACCTTCACGCTTCCTGATCTACCCTATGATTAC
AGCGCGCTGGAGCCGGCGATAAGCGGCGAGATTATGCAGATTCATCACCAGAAGCATCAC
CAGACTTACGTCATAATTACAACAATGCCCTCGAGCAGCTTGATCAGGCCGTGAACAAG
GGAGACGCTTCAACTGTTGTCAAGCTTCATAGCGCCATCAAGTTCAACGGCGGAGGTGCT
TTTTTGACTTTTTCTCTTTTATTTCCGATCTCGAAGTTGTTGTGTTCTGTCGGGTTGTT
TGTGATTGGTCGGATTGAAGATTAGGGTGTCAAAAAGTTACCGCCTTTTGATTTTTATC
TGTTTCCTCAATGGGGAAGGAATGTTTTTTTTTTTTGTTCTTGAACATCATATGGTTTTA
TATTTGTTGTTGCAGGTCATGTGAACCATTCGATTTTCTGGAAGAATCTTGCTCCTGTCA
ATGTGAGTTTGTGTTTTAAGAGTTTCTTCTGTTTATTACTGTTTAAATGTTTGTGCTT
AATGTTGTGTGTGTGTGTGTTTGTAACTATAACAGCAAGGTGGTGGAGAGCCACCG
AAGGGAGCACTTGGTGGAGCCATTGACACTCACTTTGGCTCTCTTGAAGGTTTGGTGAAA
AAGATGAGTGCTGAAGGTGCTGCTCTTCAAGGCTCAGGCTGGGTGGTGTAGTATTCTTGTT
TCACCTTTTCTTATGTTACATTGCTGGCTTTGTGCTTCACTTATAATCTTTTTTCTTCT
ACTATTGATTCCAGTGGCTCGGTTTAGACAAAGAACTTAAGAAGCTTGTGGTTGACACAA
CCGCCAATCAGGTACATATACAAGATACCGATTGTTTAGAAGGTTTTTGATTGCCCAC
GATCTTAATATTTAAATAGATGTGGTTTTGGGAATTAAGAAAATGACTGTTTGATCTC
TCAGGATCCACTTGTGACAAAAGGAGGAAGCTTGGTTCCTCTGGTGGGTATAGATGTTTG
GGAGCACGCCTACTACTTGCAGGTAACAACACTTGTTATCCCTTTAAAAGTAGTGAGTTA
GCTTATAGGATTACGAATTTAATCAACTTTTTAATCACTATTTTAACTCTTGACAGTACAA
GAATGTGAGGCCGGATTATCTGAAGAACGTGTGGAAGTGATCAACTGGAAATACGCAAG
CGAAGTTTATGAGAGTGAATGCAAGTGAGTTCGTTATAAGATAACAACATAAAGAGGGAA
TACAGTTCCCGGCTCGGCTTTGTTTTATAAGGTTGTCTGAACAACTTTACAATGTAT
CTCTTTGGT

>BnMSD3

ATATATACATAAAACCATGAGCATCGTTGTTTCTATCTTCCTTCTTACTGTTTTTGCAT
GAGCCTTGACGTGGAACAGGAAAAACCACCATGGAACCGTGTCTCGAATCGATGAAGAC
CGCTTCACTACCTGATCTACCCCTACGCTTACGATGCCCTAGAGCCAGCGATCAGCGAGGA
GATCATGCGCTTGCACCACCTGAAACACCACCAGACTTACGTTACTAATTACAACAAAGC
CCTCGACCATCTCCGTTCCGCCCTTGTCCAGTGGTGATCACTCCTCCGTCGTCAAACCTCA
GAGCCAAATCAAGTTCAACGGCGGAGGTAAACCTCAGAACCCTTGTATTATCTTTCCA
TCAGGTGCTTGTGTGATCTTAAGAAATTTGACTGATTGCGCTCTACTTTTGTACTTGTAG
GTCACGTTAACCATGCAATCTTCTGGAAAAACCTAGCCCTGTTCATGTACGAATACCTT
TCTTGGTCGTCACTCCATTGTTTTGTGATAGTTTTGTCTTTCTAATGGTTGATTTGAAT
ATAATATGTAGGAAGGAGGTGGTAAGCCACCTCAGGATCCTCTGTCTCTGCGATAGATG
CTCACTTCGGATCCTTAGAGGAGTTGATGCAAAAAATGAACTCTGAGGGTGCTGCTGTGC
AGGGATCTGGATGGGTGGTAAGCGTTTTGTTAATCTCCCTCGGCAATACTAATTAAATCG
CAATCTATTAAGTGATTAATTGAATTGTTTACACACTTTTTGTGAATAGTTCATAATTGC
ATGATGTTTGTGCTTCTTTGCTTTAGTGGTTTGGGTTAGACAAGAGCTAAAGAGACTT
GTCGTTGAGACCACAGCTAATCAGGTAGTTCAATACAATAAAAGTTAATTATTTGGTAAC
AATATTATATAACTATCAACAAGAATTTCAAATGAAAATAGAACAAAAAACTAATGAAG
AGAAAACTGTAGGATCCATTGGTGACTAAAGGATCACACTTGGTTCCTCTGATCGGAAT
AGACGTATGGGAGCACGCTACTATCCACAGGTACTCACTAACTTTTGTAAATCTTTGA
GATTATAGTAATACTACAACCCTTTTTTTAACATTAATACTATAACTTATTTGTGGTAGC
TAACAACGAATTACACAATAATATAAAGTTTTCTCAATGGGTGTGGGTTATGTATAGT
ACAAAAATGCAAGAGCGGAGTACTTGAAGAACATATGGACTGTGATCAACTGGAAATACG
CTTCAGACATATTCGAGAAGCACAAACCGAGGTCTAAACGAGTTTTAGATGAAGTAACAAG
TGTATATGTGTGTATATGAAATATGGTGATAGAGTTGGTCGTTTTCTTTTCCAAAAGT
TTCGTTACTATAGAACCGAATGCTTTGGAGGTTTTAGTCAAATAAATGTCATGTACCTTG
GAATAAAATAAAGTTGTGATACGGATGTTAAAGGTTTTAGGAA

>BnMSD4

ATGGCGATTCTGTTCTGTATTGAGCACAGAACCCTATCCGGCCTAAAGGAGACGTCTTCT
AAGCTTCTGGGTTTCAGAGGAATCCAGACCTTCACGCTTCCTGATCTCCCTTATGATTAC
AGCGCGCTGGAGCCGGCGATTAGCGGCGAGATTATGCAGATTCACCACCAGAAGCATCAC
CAGACTTACGTCACTAATTACAACAATGCCCTCGAGCAGCTTGATCAGGCCGTGAACAAG
GGAGACGCTTCCACTGTCGTCAAGCTGCATAGCGCCATCAAGTTCAACGGCGGAGGTGCT
TTTTTTGACATTTTCTTCTTTTATTTCCGATCTGGAATTTGTTGTGTTGGTCTAGTTGG
TTTGTGATTGGTCGGATTGCAGATTAGGGTGTTATAAAAGTTACCGCCTTTTGATTAAAG
TTTTGGTTTTTAATGTTTCTCTCAATGGGGAAGGAATGTTTTTTTGTCTTAAACTCAT
ATGGTTTTATATTGTTGTTGCAGGTGATGTGAACCATTCGATTTTCTGGAAGAATCTTG
CTCCTGTCAATGTGAGTTTGTGTTTTAAGAGTTCTTTCTGTTGTTACTGTTTAAATGT

TTTGTGCTTAATGTTTTTTGTGTGTGTGTGTGTGTAACGTATAACAGCAAGGTGGTGGAGA
GCCACCGAAGGGAGCACTTGGTGGAGCCATTGACACTCACTTTGGCTCTCTTGAAGGTTT
GGTGAAAAGATGAGTGTGAAGGTGCTGCTCTGCAAGGCTCGGGATGGGTGGTTAGTAT
TCCTGTTTCACCTTTTCTTATGTTACATTGCTGCTTCACCTTATAACCATGGTCATTGACT
CTCTCTCTTGATTGATTCCAGTGGCTCGGTTTAGACAAAAGAACTTAAGAAGCTTGTGGTT
GACACAACCGCCAATCAGGTATCCATGATATCAATTTGTTGAGAAGGTTTTAGATTTGCC
CACGATCTTAATATTTTATAAATAGATGTGGTTTTGATGGATTAAATGTGAACAAGACTGT
TTGATCTCTCAGGATCCACTTGTGACAAAAGGAGCAAGCTTGGTTCCTCTGGTGGGTATA
GATGTTTGGGAGCACGCCTACTACTTGACAGGTAACAACACTTGTTATCCCTTTAAAGTA
GTGAGTTAGCTTATAGGATTACGAATTTAATCAACTTTTAAATCACTATTTTAACTCTTG
CAGTACAAGAATGTGAGCCGGATTATCTGAAGAACGTGTGGAAAGTGATCAACTGGAAA
TACGCAAGCGAAGTTTATGAGAGTGAATGCAAGTGAGTTCGTTATAAGATAACAACATAA
AGAGGGAATACAGTTCCTCGGCTCGGCTTTGTTTTTATAAGGTTGTCTGAAACAACTTTA
CAATGTATCTCTTTGGTCTTTGAGTTGGCTCAATGTGTGGTTGCAATAATACACGTTTTT
CAAAAGAATTTCTAGATAAAATTTTCTGCGATGTTTCATATCTTTTTTGCTCTATAGCA
GCATTTGTGATAAA

>BnCSD2

ATGATCTGTGTGGTTTTTATAAGACTAAACACCAAAAATAAATAAACAAGCCATCACCTA
CCCACATTCTGACCTCGTGCCTGTCTTATATACAACCTAACAAAGTAGACAAACCAAGCA
AAACACACAAAGCTCATCGAGAGAAGATTGAGACATTTTCATAGCTTCTTTATTCCTCCC
AAAGGGGTACCCTGAGGTTGAGTTTCTGATTCTGGTTTCATTTTCACTATGGATTTAGCT
TAGATCGATTCTTCTCATGGCTTCTTTAGATCGATCATTGACATGTTTGCTCTCTCTGA
CTCTAAGTCTGAATCTAACCTTAGATCTTTATGGAGCTGGGTTTTAGTTTTATGATTAG
TAGATCTGTTGACAGCTTCATTTAAAACTTGTACGAGCTTGTATGAATTTAGATGGTG
GTGAAC TAGAACATCCTGATGATGATGAATTGATGATCTCATATCCGGTTGTGTCTAATT
GATAAATATCTCTTATGGGTTTAAATCAAGATCTATTTTTCGCATCAAGCTTGAATTAAGA
CAATATGAGAGATTGGTTATAATTCTAAATAGGTGTGATGTTTGAACCTATTCTTTAGTT
TCTGGATGTTTACATGTTTTTTTTTTTTGTATATATGTTGAGATAAATGGTTTTACTTGCT
TTTGATTATACAGATCACAAAGGATAACAAACAATGGGCAAGGAGTTGCAGTCTTGAAC
AGCAGTGAGGGTGTTAAGGGGACTATCTTCTTACCCAGGAAGGAGACGGTACTTTTTCT
TATTGTGCCTTTTAAAGATACTTGAAGCATTCTTACTTTTTTATGAAATGATTGGATTCT
TGTGTTAGGTGTGACCACTGTGACTGGAACAGTTTCTGGACTTAAACCTGGTCTACATGG
TTTCCATGTCCATGCTCTTGGTGACACCACTAACGGTTGCATGTCCACCGGTACTACTCT
TCTATCTCTCTGAAGGAACACCTTTCTGGATATTTTGTGGATAAGAACTTTGAGGAG
ATGATGGTGTTCCTACATGGTTTTTCTAGTTATTCACTTAACTTTTTTTGTTTGTTC
TTGTTTGTTCAGGAGATTATAATTATATTTTAAATCCGGAACCTCAAGTATTGTCAAAG

TATTTGAAACCATTATTAATCCTTTGTTTCAAATCTCGTTTTTCCAGGTCCACATTTCAA
CCCTGACGGTAAACAACACGGCGCCCCAGAGGATGCTAATCGTCATGCTGGAGATCTAGG
AAACATCATTGTTGGAGATGATGGTATAATTTGTTCTCAGCATTTGTATCTCTCTGATCT
CAAACCTTCTTTTGAGCAGTTTTATATCTTGAGACTCTTCATCATCCTGTTTGCTATTTGT
AAACTTGTTTTATGCGGTCCTAGTTTTATAGTACAGTTCTCATCTTTGACTAGCTTTTAG
TGTTTCATGGATTAACACCAAACCTTTTGGTTTTGCTATCCCAGGAAGTCCACCTTCACA
ATCACTGACTGCCAGGTTTCGTAGCTTTTCTACCTACTTTGTGCTCTTTTTTCTTCAGTGA
ACCAATGTTTTGTGTTCTGTACAGATTCTCTTAGTGGACCAAACCTATTGTGCGGAAG
GGCTGTTGTTGTCCACGCAGACCCTGATGACCTCGGAAAGGGTAATGACTTTTGGCTCTT
TAAGATCATTTTTGTTTTGTTTGACATCCTTAAGTTACATTGTCCATATGAAGACATCTAG
TAGTCTCAACATCAATACTAAGAACACTCTAAAACCATTTCGATTTTTACATTTTCAGGAG
GCCATGAACTCAGCTTGGCTACCGAAACGCAGGTGGCCGTGTTGCTTGTGGTAAGTAGA
AAAAAACCACAATTTTCTCTCATTTTCTGTGGCAGCTCAACGCTCATCTTGGTCTTGTAT
ATTCATATTGCATTTTGGGTTTAGGCTGAAAATAGATAACATCATGTCCGTCATCAAATG
TATCATAGTTTTAATATGTTTAAGAAGTGGCGACAGATTAACATATCAGTCTGTGGGAATT
CAACCTCACTTGTGATGATTTCTCAATCGATCTAATAGACTCAGAAAGGATCAACTAACT
GAATTATCCTTTTTGCAGGCATTATTGGTCTTCAGGGCTAAACTGTTACTTATCGAGGAA
GAGAGTGATGCAATAAGGAGGTCATATACCTCTAGACCTGGCTAGTTTGTGTGTGTATCT
GTGTGTACTGTGTGTGTGGCTATAATCTCTCCTTTGTGGCTCAATACATTTTATTTAAGA
CCAAAAAAATTCAGGACTTTTACTATTTTCATGAATAAGAGCAGATGTGAAATTAAACT
TCGACCGTATCAA

Table S1. Primers used for RT-qPCR analysis of the genes.

Gene Name	Primer	Sequence	Product Size (bp)
<i>BnMSD1</i>	Forward	5'-CAGTTCCCATCTCGGCTTTG-3'	108
	Reverse	5'-TGTATTATTGCAACCACACGAGT-3'	
<i>BnFSD1/6</i>	Forward	5'-TGGTCGCGGTATAAAGGACA-3'	202
	Reverse	5'-GTAGTGTTTCCAACGTGCCA-3'	
<i>BnCSD8</i>	Forward	5'-AGGCTGCCATTGTTTCATGC-3'	165
	Reverse	5'-TTAGCCCAGACTTAGAGCGG-3'	
<i>BnCSD2</i>	Forward	5'-TCGAGGAAGAGAGTGATGCA-3'	196
	Reverse	5'-ACGGTCGAAGTCTAATTTTACA-3'	
<i>BnCAT7</i>	Forward	5'-GGAGCTGAGAGATTCCGTTG-3'	158
	Reverse	5'-GAACCACCACTGAGGACGAT-3'	

Table S2. Putative conserved motifs of BnSOD gene family.

Motif	E-value	Sites	Width	Sequence	Function	Description
MEME 1	2.8e-414	15	50	VEATYVLKPPPYPLDALEPHMSRETLEVHWGKHHRTYV DNLNKQLLGLDL	Sod_Fe_N	Iron/manganese superoxide dismutases, alpha-hairpin domain
MEME 2	3,40E-223	14	27	PGKHGFHIHEYGDTTNGCASTGPHFNP	Sod_Cu	Copper/zinc superoxide dismutase (SODC)
MEME 3	2,70E-249	10	41	JIKATYNNGBLLPEFNNAQAawnHEFFWESMQPGGGGK PSG	Sod_Fe_N	Iron/manganese superoxide dismutases, alpha-hairpin domain
MEME 4	1,70E-211	16	21	VPLLTDVWEHAYYLDYKNER	Sod_Fe_C	Iron/manganese superoxide dismutases, C-terminal domain
MEME 5	5,10E-300	16	41	AIERDFGSFENFVEKFNAAAATQFGSGVWLALDKELK KLV	Sod_Fe_C	Iron/manganese superoxide dismutases, C-terminal domain
MEME 6	1,60E-161	8	41	RHAGDLGNIIVGDDGVAEFTITDNQIPLSGPNSIVGRAVV V	Sod_Cu	Copper/zinc superoxide dismutase (SODC)
MEME 7	7,40E-157	14	29	AEYINTFMNNLVSWEAVSSRLARAEAAVT		
MEME 8	2,30E-138	6	50	QDHTATEPLGDLGTLEADQSGEAFYTGKKEKLKVVDLIG RAVVVYETEDK	Sod_Cu	Copper/zinc superoxide dismutase (SODC)
MEME 9	1,20E-133	6	50	VNKGDASTVVKLHSAIKFNGGGHVNSIFWKNLAPVNZG GGEPPKGALGG	Sod_Fe_N	Iron/manganese superoxide dismutases, alpha-hairpin domain
MEME 10	6,10E-78	29	11	KTTNAQGPLVW		
MEME 11	2,80E-74	4	41	RNLRQEDGVMPQLLTEFMVDMKCEGCVNAVKNKLETIE GRE		
MEME 12	2,10E-72	10	29	SSEG VKGTIFFTQEDSGITLVTGKVSGLS		
MEME 13	1,60E-71	4	50	KVDVDLANQVVRILGSSPVKAMSQALEQTGRKARLIGQG VPQDFLVSAAV		
MEME 14	5,10E-62	6	21	YLKNVWKVINWKYASEVYEKE		
MEME 15	7,90E-41	8	21	SPPRRLGLPRSFASSPMTTVP		
MEME 16	7,40E-38	6	21	SGPGLTAAVIARSAGVGENYK		
MEME 17	7,20E-32	6	21	MASFLRSVATTTAAVAAAASAI		
MEME	3,30E-24	7	11	DDLKGKGHELS		

18

MEME19	3,30E-16	6	1	GKTHGAPEDAN
MEME20	1,30E-13	2	4	MMMTTSSFLLSRCSSLPSQGPNRQMQWKRHEKRQFSRKVAV
			1	

Table S3. List of Cis-acting regulatory elements in the BnSOD promoter

Category	Cis elements	Function	<i>BnCSD1</i>	<i>BnCSD2</i>	<i>BnCSD3</i>	<i>BnCSD4</i>	<i>BnCSD5</i>	<i>BnCSD6</i>	<i>BnCSD7</i>	<i>BnCSD8</i>	<i>BnCSD9</i>	<i>BnCSD10</i>	<i>BnCSD11</i>	<i>BnCSD12</i>	<i>BnCSD13</i>	<i>BnCSD14</i>	<i>BnFSD1</i>	<i>BnFSD2</i>	<i>BnFSD3</i>	<i>BnFSD4</i>	<i>BnFSD5</i>	<i>BnFSD6</i>	<i>BnFSD7</i>	<i>BnFSD8</i>
Promoter and Site-binding related elements	Box III	protein binding site		1							1													
	CCAAT-box	MYBHv1 binding site				1		2					1			2	1			1	1	1	1	
	MBS	MYB binding site involved in drought-inducibility			4	1	4	1				3	1	2		1	3	4	2		1	1		2
	MBSI	MYB binding site involved in flavonoid biosynthetic genes regulation		1									1											
	MRE	MYB binding site involved in light responsiveness																						
	3-AF3 binding site	part of a conserved DNA module array (CMA3)					1					1												
	CTAG-motif	cis-acting regulatory					2														1			

		element																							
Hormone responsive elements	ABRE	cis-acting element involved in the abscisic acid responsiveness			2		4	1	1	1	1	3			1	4	3	1	5	7	6	2	5	1	
	ABRE2	cis-acting element involved in the abscisic acid responsiveness					1					1													
	ABRE3a	cis-acting element involved in the abscisic acid responsiveness																	2	2	2		2		
	ABRE4	cis-acting element involved in the abscisic acid responsiveness																	2	2	2		2		
	as-1	oxidative stress-responsive element and salicylic acid activate	3	2	4		4	2	5	2	4	1	3		5	4	2	2	3	2	1	1	3	2	
	AT~ABRE	ABA response	1								5								1						
	AuxRR-core	cis-acting regulatory element involved in auxin responsiveness					1					1									1				

	CARE	ABA response, GA response		1				1					1		1									
	CGTCA- motif	cis-acting regulatory element involved in the MeJA- responsiveness	2	2	4		1	2	5	2	1		3		5	4	2	2	3	2	1	1	3	2
	ERE	ethylene- responsive element	2	3	1					3	3		1				1	1	1		4	2		
	GARE-motif	gibberellin- responsive element	1	1	1		1		1	1	2	1						2		2	3		2	4
	P-box	gibberellin- responsive element	1			1		2		1				1	2		1		1	1			1	
	SARE	cis-acting element involved in salicylic acid responsiveness								1										4				
	TATC-box	cis-acting element involved in gibberellin- responsiveness																		1			1	
	TCA- element	cis-acting element involved in salicylic acid responsiveness		1	1	3	2				1	1	2	5					1	2	1		1	
	TGA-box	Auxin- responsiveness				1	1							1										
	TGACG- motif	cis-acting regulatory		2	4		1	2	5	2	1	2	3		5	4	2	2	3	2	1		3	2

		element involved in the MeJA- responsiveness																							
	TGA- element	auxin-responsive element			3			1		1		1			1	2					1	3			
Light responsive elements	AAAC-motif	light responsive element																							
	ACE	cis-acting element involved in light responsiveness																1							
	AE-box	part of a module for light response					1			2		1					1					1			
	ATC-motif	part of a conserved DNA module involved in light responsiveness					1					1						1							
	ATCT-motif	part of a conserved DNA module involved in light responsiveness			1				1					1		1								1	
	Box 4	part of a conserved DNA module involved in light responsiveness		2	1	1		4	1	10			5	2	2	1			2	2		1	1		2
	Box II	part of a light responsive element					1					1	1	1											
	chs-CMA1a	part of a light	1																1		1				

		responsive element																						
	GA-motif	part of a light responsive element	1			2		1						1					1					
	GATA-motif	part of a light responsive element				1	2	2				1		1			1	2		1	1	1	1	
	GT1-motif	light responsive element						2	2				3		3			1	1	5	5	1	5	
	I-box	part of a light responsive element				1		1			1	1	1	1					1	3	3		2	
	LAMP-element	part of a light responsive element																1	1					
	Sp1	light responsive element			1				1						1								1	
	TCCC-motif	part of a light responsive element			1		1	1																
	TCT-motif	part of a light responsive element	1		1		2	3	1			2	1	1	1	1	2		2	3	1		2	
	chs-CMA2a	part of a light responsive element																						
	GATT-motif	part of a light responsive element																						
	G-Box	cis-acting regulatory			1		1	1	3	1		1			2	1	2	1		3	3	1	1	1

		element involved in light responsiveness																							
	G-box	cis-acting regulatory element involved in light responsiveness			3		2	1				2			1	4		1	4	6	6		4	1	
stress-related elements	AP-1	Cd response															1					1			
	ARE	cis-acting regulatory element essential for the anaerobic induction	2	5	3	2	4	2	7	1	4	7	1	1	5	4	5		3	3	3	6	1	1	
	box S	wounding and pathogen response					1		1			1			1	1	1	1	2	1		1	2	1	
	DRE core	drought response	1														1	1	1	1		1	1		
	DRE1	drought response			1				1				1	1	1	1									
	GC-motif	enhancer-like element involved in anoxic specific inducibility			1	1		1								1									
	LTR	cis-acting element involved in low- temperature responsiveness							1	2					1		1				1				
	MYB	water response, drought response	6	5	4	7	5	6	6	4	4	5	4	6	4	4	1	10	2	6	5	4	5	5	
	MYC	drought response	3	3	2	5	2	7	2	1	2	1	4	3	2	2	7	4	2	4	4	5	3	3	
	STRE	stress-	1	3		2	2	2		2	2	2	3	3	1	1	1		4		1		4		

		response element																						
	TC-rich repeats	cis-acting element involved in defense and stress responsiveness	1				1	1	1		1	1	1		1		1			1		2	1	1
	WRE3	wounding		3	1			1			1		1			2	1	3	2		1	1		2
	WUN-motif	wound-responsive element				2	1			1		1	2				2		1			1		
	W box	elicitor responsive cis-element			1					1	1								1	2	1			
	MYB recognition site	involved in drought-response				1		2					1			2	2			1	1	1	1	
Tissue and Development related elements	AACA_motif	involved in endosperm-specific negative expression																	1					
	CAT-box	cis-acting regulatory element related to meristem expression			2	1	1			1	2	2	1	1		2	1		1			1	1	
	CCGTCC motif	cell cycle and cell proliferation response	1				1			2		1				1	1	1				1		1
	CCGTCC-box	growth and development responsive elements	1		1		1			2		1				1	1	1						1

	dOCT	related to meristem specific activation						1		1							1		1			1		
	GCN4_motif	cis-regulatory element involved in endosperm expression	1		2		2								1			1	1					1
	HD-Zip 1	element involved in differentiation of the palisade mesophyll cells			1	1							1					1						
	A-box	cis-acting regulatory element /sequence conserved in alpha-amylase promoters	1	1	1		1			2		1				1	1	1						1
	circadian	cis-acting regulatory element involved in circadian control	2		2		1					1	2		1	1				1				
	O2-site	cis-acting regulatory element involved in zein metabolism regulation								1							1		3			1		
	AAGAA-motif	, cis-element involved in secondary xylem development	2		2	2	2		1	1	1	3		2		2		1				1	1	1

Table S4. Putative BnSOD-targeted miRNA.

Target_Acc.	miRNA_Ac c.	Expectation	miRNA_sta rt	miRNA_en d	Target_start	Target_end	miRNA_aligned_fragment	alignment	Target_aligned_fragment	Inhibition
BnCSD2	bn-miR156a	4	1	21	282	302	UGACAGAAGAGAGUGAGCACA	:::.....:::	CAUGUUUGCUCUCUUCUGACU	Cleavage
BnCSD2	bn-miR156d	4	1	20	283	302	UGACAGAAGAGAGUGAGCAC	:::.....:::	AUGUUUGCUCUCUUCUGACU	Cleavage
BnCSD2	bn-miR156e	4	1	20	283	302	UGACAGAAGAGAGUGAGCAC	:::.....:::	AUGUUUGCUCUCUUCUGACU	Cleavage
BnCSD2	bn-miR156f	4	1	20	283	302	UGACAGAAGAGAGUGAGCAC	:::.....:::	AUGUUUGCUCUCUUCUGACU	Cleavage
BnCSD13	bn-miR159	5	1	21	231	251	UUUGGAUUGAAGGGAGCUCUA	::: :: :.....	UGGACCUCACUUCAAUCCA	Cleavage
BnCSD7	bn-miR159	5	1	21	210	230	UUUGGAUUGAAGGGAGCUCUA	::: :: :.....	UGGACCUCACUUCAAUCCA	Cleavage
BnMSD1	bn-miR159	5	1	21	137	157	UUUGGAUUGAAGGGAGCUCUA	::: :: :.....	UUGGUCUCCGAUCAAUCCAG	Translation
BnCSD14	bn-miR166a	4	1	21	851	871	UCGGACCAGGCUUCAUUC	:: : :.....	AGGAUAAGAAGUCUGGUCCG	Cleavage
BnCSD14	bn-miR166b	4	1	21	851	871	UCGGACCAGGCUUCAUUC	:: : :.....	AGGAUAAGAAGUCUGGUCCG	Cleavage
BnCSD14	bn-miR166c	4	1	21	851	871	UCGGACCAGGCUUCAUUC	:: : :.....	AGGAUAAGAAGUCUGGUCCG	Cleavage
BnCSD14	bn-miR166d	4	1	21	851	871	UCGGACCAGGCUUCAUUC	:: : :.....	AGGAUAAGAAGUCUGGUCCG	Cleavage
BnCSD14	bn-miR166e	4	1	21	851	871	UCGGACCAGGCUUCAUUC	:: : :.....	AGGAUAAGAAGUCUGGUCCG	Cleavage
BnCSD14	bn-miR166f	4,5	1	21	849	871	UCGGACCAGGCUUC--AUCC	::: :: :.....	AGAGGAUAAGAAGUCUGGUCCG	Cleavage
BnCSD2	bn-miR167a	4	1	22	360	380	UGAAGCUGCCAGCAUGAUC	::: :: :.....	GUAGAUC-UGUUGACAGCU	Cleavage
BnCSD2	bn-miR167b	4	1	22	360	380	UGAAGCUGCCAGCAUGAUC	::: :: :.....	GUAGAUC-UGUUGACAGCU	Cleavage
BnCSD2	bn-miR167c	4	1	21	361	380	UGAAGCUGCCAGCAUGAUC	::: :: :.....	UAGAUC-UGUUGACAGCU	Cleavage
BnCSD2	bn-miR167d	4	1	20	362	380	UGAAGCUGCCAGCAUGAUC	::: :: :.....	AGAUC-UGUUGACAGCU	Cleavage
BnFSD2	bn-miR394a	5	1	20	793	811	UUGGCAUUCUGUCCACCUC	::: :: :.....	GGAGGUGGA-GGAAAGCCAA	Translation
BnFSD8	bn-miR394a	5	1	20	565	583	UUGGCAUUCUGUCCACCUC	::: :: :.....	GGAGGUGGA-GGAAAGCCAA	Translation
BnFSD2	bn-miR394b	5	1	20	793	811	UUGGCAUUCUGUCCACCUC	::: :: :.....	GGAGGUGGA-GGAAAGCCAA	Translation
BnFSD8	bn-miR394b	5	1	20	565	583	UUGGCAUUCUGUCCACCUC	::: :: :.....	GGAGGUGGA-GGAAAGCCAA	Translation
BnCSD14	bn-miR397a	4,5	1	22	40	61	UCAUUGAGUGCAGCGUUGAUG	::: :: :.....	GCUUCAAUUCUGCGGUCAGUG	Cleavage
BnCSD14	bn-miR397b	4,5	1	22	40	61	UCAUUGAGUGCAGCGUUGAUG	::: :: :.....	GCUUCAAUUCUGCGGUCAGUG	Cleavage
BnCSD2	bn-miR403	3,5	1	21	1213	1233	UUAGAUUCACGCACAAACUCG	::: :: :.....	CUAGUUUGUGUGUGUAUCUG	Cleavage
BnCSD9	bn-miR403	3,5	1	21	1255	1275	UUAGAUUCACGCACAAACUCG	::: :: :.....	CUAGUUUGUGUGUGUAUCUG	Cleavage

BnFSD4	bna-miR6033	4,5	1	21	551	571	UGAACCAGAUAGAGUGGGACU		GCUCUUACUCAGUUUGGUUCU	Translation
BnFSD5	bna-miR6033	4,5	1	21	502	522	UGAACCAGAUAGAGUGGGACU		GCUCUUACUCAGUUUGGUUCU	Translation
BnFSD7	bna-miR6033	4,5	1	21	556	576	UGAACCAGAUAGAGUGGGACU		GCUCUUACUCAGUUUGGUUCU	Translation
BnCSD7	bna-miR6034	5	1	21	556	574	UCUGAUGUAUAGCUUUGGG		UUCAAA--UGUGUACAUCAGA	Cleavage

Table S5. Codon usage characteristics of BnSOD gene family.

title	CAI	CBI	Fop	Nc	GC3s	GC
<i>BnFSD1</i>	0,13	0,124	0,5	51,4	0,5	0,5
<i>BnFSD9</i>	0,16	0,143	0,51	53,1	0,42	0,47
<i>BnCSD10</i>	0,11	-0,03	0,41	52,8	0,43	0,48
<i>BnFSD8</i>	0,12	-0,07	0,38	51,9	0,39	0,46
<i>BnMSD6</i>	0,14	0,127	0,49	59,6	0,5	0,48
<i>BnCSD13</i>	0,09	-0,01	0,42	55,6	0,32	0,48
<i>BnMSD1</i>	0,14	0,039	0,45	54,1	0,55	0,5
<i>BnCSD4</i>	0,11	-0,02	0,41	54,2	0,34	0,46
<i>BnFSD7</i>	0,12	-0,02	0,41	53,1	0,45	0,45
<i>BnCSD1</i>	0,11	0,117	0,48	49,1	0,53	0,55
<i>BnCSD12</i>	0,1	-0,04	0,4	55,5	0,35	0,46
<i>BnCSD9</i>	0,17	0,178	0,53	49,8	0,43	0,52
<i>BnFSD4</i>	0,15	0,018	0,43	52,8	0,44	0,45
<i>BnCSD6</i>	0,18	0,162	0,53	39,8	0,33	0,5
<i>BnCSD14</i>	0,13	0,031	0,44	54,3	0,49	0,51
<i>BnCSD11</i>	0,18	0,134	0,51	46,4	0,42	0,5
<i>BnFSD5</i>	0,13	-0,01	0,41	51,4	0,44	0,45
<i>BnCSD3</i>	0,11	-0,02	0,41	56,8	0,48	0,51
<i>BnCSD7</i>	0,09	0,011	0,44	52,8	0,34	0,48
<i>BnFSD10</i>	0,13	-0,01	0,41	54	0,46	0,45
<i>BnFSD3</i>	0,15	0,126	0,5	52	0,41	0,47
<i>BnFSD2</i>	0,12	-0,09	0,37	49,9	0,39	0,46
<i>BnFSD6</i>	0,12	0,118	0,49	47,7	0,48	0,49
<i>BnCSD8</i>	0,11	0,151	0,51	47,3	0,5	0,54
<i>BnCSD5</i>	0,12	-0,03	0,41	51,2	0,43	0,48
<i>BnMSD3</i>	0,1	0,048	0,45	54,2	0,51	0,49
<i>BnMSD4</i>	0,14	0,145	0,51	58,3	0,52	0,49
<i>BnMSD5</i>	0,11	0,075	0,46	55,9	0,54	0,5
<i>BnCSD2</i>	0,17	0,166	0,53	48,1	0,41	0,52
<i>BnMSD2</i>	0,11	0,071	0,46	54	0,51	0,49

Table S6. Correlation coefficient between the parameters of codon usage of *BnSOD* gene family.

Parameters	CAI	CBI	Fop	Nc	GC3s
CBI	0.60 ^{**}				
Fop	0.64 ^{**}	0.99 ^{**}			
Nc	-0.43 ^{**}	-0.34 ^{ns}	-0.37 [*]		
GC3s	-0.01 ^{ns}	0.28 ^{ns}	0.22 ^{ns}	0.27 ^{ns}	
GC	0.13 ^{ns}	0.61 ^{**}	0.59 ^{**}	-0.31 ^{ns}	0.40 [*]

n.s. = not significant, * p < 0.05, ** p < 0.01