

Supplementary Material

Table S1 Specific primer of 32 RcBBX members used in this study.

Table S2 Protein sequences of 32 RcBBX proteins.

Table S3 BBX protein sequences used to construct the phylogenetic tree.

Table S4 Domain organizations of BBX proteins in *R. chingii*.

Table S5 The 44 anthocyanin biosynthetic enzymes in *R. chingii*.

Table S6 Correlation between RcBBX26 and anthocyanin biosynthetic genes.

Figure S1 Semi-qRT-PCR analysis of MOCK and *RcBBX26* in transgenic *R. chingii* leaves.

Figure S2 Analysis the transcript level of anthocyanin biosynthetic genes in transgenic *R. chingii* leaves. Asterisks indicate significance between MOCK and *RcBBX26* based on the student's *t*-test at $p < 0.01$.

Table S1

Gene ID	Forward primer (5' to 3')	Reverse primer (5' to 3')
<i>RcBBX1</i>	CGCAAGTGCTTCCTCAAATG	GCTCCGCATCTATATCGTAAGG
<i>RcBBX2</i>	GATCGACGGTATGGGAAGAAAG	TAAACGACCAGCACTGTAACC
<i>RcBBX3</i>	AGGTGAGACCAGAAGAGTACAA	CATCATCACTGGCATCCGATAG
<i>RcBBX4</i>	GTCGGCAGTATGGTGATTCTAA	TCATCAGATCGCCTACCATTTC
<i>RcBBX5</i>	TACCTTCCCATCGTCTCCATAG	GAACACCACTTTGGCGTTATTG
<i>RcBBX6</i>	TACCAAGCACCCAACAACCTC	CTTGGGTGTAACGGGTCTAATG
<i>RcBBX7</i>	GAAGCAGCGTGTCTGTGATTA	GACTTCTCGGTCGCAAGTAAAG
<i>RcBBX8</i>	ACGAGCACTGCTTCGAAAT	TCCAGTGACGATGAGGATACA
<i>RcBBX9</i>	TCAGCAGGACAGAGCAATTC	CAGAGGTAGCAGAGAGCTTAAC
<i>RcBBX10</i>	CCGAGTTCACCATGCCAATA	CATGCCTTTCCTGGCAGATA
<i>RcBBX11</i>	CGCAGGAAGAACGAGAAGAA	AACCTGAAGTAGAGGGTGAGA
<i>RcBBX12</i>	CAGAGCTTTGGCTACATGGATA	TGCACTCATAATCCTCCTGTTC
<i>RcBBX13</i>	GGAAGACGATGAGGATGAGAAC	CGCTTCACTATCCGAAGAACA
<i>RcBBX14</i>	CCACCAGGCTCAACTTCTTTA	CCTGCGCTTACATGGATATGA
<i>RcBBX15</i>	TCCACAGCCTTCTTCTCTATCT	GCCTCGATGATCTGCAGTAAA
<i>RcBBX16</i>	CTCCGAACGGTAGGAACAAA	CTTGCCTTCCTCGACTCATATC
<i>RcBBX17</i>	GGCATTGACCTCCACTTGTA	GGCATGTGATGTTGGCATTT
<i>RcBBX18</i>	GTGCCAAATGCGATGTTGAG	GTCGCATCTAGGGAGTTTGTT
<i>RcBBX19</i>	GTTCTATCTGCCACAGGAGTTT	CTGCTCCCATTTCCTCGTTAT
<i>RcBBX20</i>	TCAGCCGAGTCAATCGTTAAG	TGAGGTTCGGAATGAGGAAAG

<i>RcBBX21</i>	GCGGGTTTGTACCGAATTAC	CATCAAGCCCTCTGCCTAATA
<i>RcBBX22</i>	CAACCCTGTCATTCTCTGTCTC	CCGAGTGTCCAACATCCATT
<i>RcBBX23</i>	CCGTGTGACGAGTTGGATAA	CAGTCCTCATCAAGTCCCTTAC
<i>RcBBX24</i>	GCAACTCACAACCAGCATTAG	GTGTTTGCCTCTTGTGTGATG
<i>RcBBX25</i>	CCAGGAGACTGTTGGTACTTC	ACGAGTTCGCTGTGTGTATG
<i>RcBBX26</i>	CTGTGTCTCTAGCACCGAATC	AGCATCCCAAGCCTTTCC
<i>RcBBX27</i>	CAACAACAAGGAGGGAGGAA	CTTGTAAGTTGAAGGAGGTGGAG
<i>RcBBX28</i>	GCCAAGTGTGCAACTCAAAG	AGCATTGGCCGAGTGAAT
<i>RcBBX29</i>	CTGCTGAATCCCGTGAAGAA	ACCTCCACTCCGAAGAAGAA
<i>RcBBX30</i>	GTCAACAATGGCGAGAGAGA	AAATCGTCCTGAGAGCGAAG
<i>RcBBX31</i>	GAACCTTGGGACTCTACTTTGG	CTGGCCTTTCTAGAGGCATATC
<i>RcBBX32</i>	AAGCCTGCAAGACCCTTATC	CAGCACACCGTCGTCTAAA

Table S2

Protein name	Amino acid sequences
RcBBX1	MGSRKEEERNEKIIRGLMKLPPNRRRCINCNSLGPQYVCPNFWTFVCTTC SGIHREFTHR VKSVSMKFTSQEVEALQNGGNQRAREIYLKDWDLQRQ RLPDSSKVDKIREFIRSVYVDRQYAGGRTSEKPPRDLQNHRIREDETRR ASSYHSYSQSPPYDYQYEDRRYGKKAALTRKPGSDRGRYEGKLSSFG YSAGRLSDQMYEDRFENDGSGSIVSDYSVSSGGDASRSGVQSPNFQKD IGSSSPSFQPSQDTISEVRCQAKSTVLETNVNRDAEAKPFSQRTVSSGSF GSVDSYSMSVKSFNSGGLTDAVSEPDQYAGTLQAKPTSLSSLFGSSDRL DLFKAPVQQEISSAASSVDLFQLPAASSSLSIHSFQPSVLSSASSLNHQP PQALTPSLELFADFPQHQSAPAKQVQESVPKNEGWATFDTHQPSTSISGT ENIIPANIASNDGGSIGNFDLFSSSNPGMQWPSFENISNPWSDNLHDFTA PNTTESTQSWNAFEDSIGHFSLEGTKKSGESVGTDKLLSAGDQYMGVR ISEDSSKDG IQRAASEGEPHDPSP LPHILGPPYTPQVLPQMGEIKSDATN HRSNNPFDIPYDIDAEQTNMFFDISSLQASLPNAPLQSSFLSDISQPWFQ NAATVMPYIPAAVEGGLTYLAGQAQSTQIPNVSTQGPVASIGGNPFA
RcBBX2	MGSRKEEERNEKIIRGLMKLPPNRRRCINCNSLGPQYVCPNFWTFVCTTC SGIHREFTHR VKSVSMKFTSQEVEALQNGGNQRAREIYLKDWDLQRQR LPDSSKVDKIREFIRSVYVDRQYAGGRTSEKPPRDLQNHRIREDETRRA SSYHSYSQSPPYDYQYEDRRYGKKAALTRKPGSDRGRYEGKLSSFGY SAGRLSDQMYEDRFENDGSGSIVSDYSVSSGGDASRSGVQSPNFQKNI GSSSPSFQPSQDTISEVRCQAKSTVLETNVNRDAEAKPFSQRTVSSGSFG SVDSYSMSVKSFNSGGLTDAVSEPDQYAGTLQAKPTSLSSLFGSSDRLD LFKAPVQQEISSAASSVDLFQLPAASSSLSIHSFQPSVLSSASSLNHQP QALTPSLELFADFPQHQSAPAKQVQESVPKNEGWATFDTHQPSTSISGTE NIIPANIASNDGGSIGNFDLFSSSNPGMQWPSFENISNPWSDNLHDFTAP NTTESTQSWNAFEDSIGHFSLEGTKKSELVGTDKLLSAGDQYMGVRIS EDSSKDG IQRAASEGEPHDPSP LPHILGPPYIPQVLPQMGEIKSDATNHR SNNPFDIPYDIDAEQTNMFLDISSLQASLPNAPLQSSFLSDISQPWFQ AATVMPYIPAAVEGGLTYLAGQAQSTQIPNVSTQGPVASIGGNPFA
RcBBX3	MRTLCDSCESAAAIVFCAADEAALCRACDEKVHLCNKLASRHVRVGL ATPSAVPRCDICENAPAFFYCEIDGSSLCLQCDMVVHVGGKRTHGRYL VLRQRVEFPQDKPGNIVEDPPSQPIDGETRRVQHQQPRMTIGENHQN RTSPIRLSDASDDGHVKMDNKLIDLNMKPNRMHGGQASNKEDQ
RcBBX4	MNLTRTATVRELLHLQRIEEVRMANRVKEDEKNERIIRGLLKLLENRR CINCNSLGPQYVCTNFWTFVCTNCSGIHREFTHR VKSVSMKFTSQEV KSLQEGGNQRAKELYLKELDPQRNSFPDSSNVERLRDFIKHVYVDRRY TGERNFDKPPRVKMGDKEDSYENRRLDYHGGSRSPYDDERRYSS PGGRSYEEQRSPGYDQESRQYGD SKRSPSRPEIVNDWRREDRFGNGRR SDDRRISDGSKLDAKSPERPRDINSSSPMVRPVRDILGEKTIPLRIIEPP KANSVRATDGSVVTQRTASSSSLSANGNPVEVKLETSGSLIDFDADIE PASAAAVPQAQQT SVTQSYSQPVNSDSDTNWASFDVAPQVKVSQAPA NANSLESLLSQLSVSAPVPSYVSGTAGNTGAFTAAGQMTAPFSGNSVIT PVGHTMLPTATGSHTIAPVTSLSLTFPPVGAPVAAPGLAQIFPANAGNFP ATGSGQWPNMPHQQPSLFPNGLQSASQQYIPSVGGASSNQPNLAH APNAQVQPSNPATQAPQHVSRSIHNVSTIASQPSAGDVKSIGRSELPAD

	LFAMNYSSFPTVPVGWQTGPPHGMGFAMPYNTAVPMPTFQQSLKSAN PFDVNSEPPPVQATTFFPVASSQGALPNVRPPSGLVRTSSLGAPSSAWM PLQSSSYSSGLPLQAPPYASQMPPSAYMGQQIPSSMPPSGYQGVGAFGA EGAAFGSLNMDQQVIGRFSAPATPNPFPSAGGNPFG
RcBBX5	MGIQKPAWLEALYTQKFFAACSFHETAKKNEKNVYCLDCCTSICPHCL PSHRLHRLQLIRRYVYHDVVRLEDLQKLVCNNVQSYTINNAKVFIK KRPQNRQFKGSGNYCTSCDRSLQEPYIHCSLGCKVDYVLTlKRGLSPY LKKCDLQLSPDFLVPLQSESDQDMTSDQTLHSTIVDCDDPMSYSSSS GSENMSMAYTNGDQIVRKKRSLNYSYVYSARSARKVSDDDQDMAS SIISRRKGIPHSPLC
RcBBX6	MGNRIKEEEKIERIIRGLLKLLENKRCMNCNSMGPQYVCTTFLTFVCTN CSGVHREFTHRVSVMKFTAEVSSLQAGGNERARQIYFKEFDPQY HSFPDSSNINRLRDFIKHVYVDRKYTGERSVQKLPRRLSEEPDESARKV GAYHGGSRSFHDEERKVGAYYGGSRFRDEDWKVAVPYGGSRFRDH EDRFEQNYSSQGSSPSVRDQNKSSILSRKFKKRRFQEKPLRFEVVDNRI RDDRKARSGFPTGESRSQSRTPENKKNMDSSSFVARFVKGKPGENEL PPQVGEISIANQKHADGSAHNQKMKSMSSHDGNAVELKSQPQQIPPL NNDNWSASFESSTKENASQVPKPDTLESLLFELSTPTSPAITASEAPSN DDAPSTACTNNMSAGGVASDAPAEQMLSLFDTVCASTSSSISTSVPVQP SDAGHLQALPTSGGDTSVRVTDAQQLPSTQQDQYSISFASESGFTSQHT VTPVGASNGLSRTSSLAPNTQGSLSVSAETPSQSMRLTQSLPVETKSSE REELPVDLFAASYSSIPSQASGWHNGPPHGMGFHMQYYPNIEPIDILVS FTACSCISGSRKPTNPFDLNDNKSVPSTHFPMSMSSVEDALHNVSVPSSL MHTSSLGSYSSHLKPPQSPSHESMMPSHSLPSYASFSPSMGEQLHNNAQ FLRPHEIGGFSSNEAAVFGNLSTSQQPSIRYQAPNNSETFSPMGERGTTL YTNCIRPVTPKINIINPVVTPAAIISGIPKSGPFVNAEATNGLHGLDGHW DAVYGTTNNVVVPDENQCCTHVKVLS
RcBBX7	MDGSKEGGGGGGHQNMRQKQRVCDYCGDSMALLYCRADSAKLFC TCDREVHSANQLFSKHTRSQCDCADKAPASIFCSTESSVMCQNCDE RHNLSSSSVHRRPLEGFTGNPCLNELLAFFVGFFENLDKKALIFSEESGS GGDGDGLDGLSLGLSDGFSDDLWVETPSVVSLDDLIVSNPAHKFQAMG VPPLPKNRNAACGRHKEEVLSQLRTLAKSEPDLMNENVDLNSFMSFQS LESEQNMQSAGFCTIFEQDAEPLAFPAYEAQEFESNDCGKSANQDFFPK TLQRSYLQDCSMVPDLNSNNDGTASHASDGYGGQMNSEASSAFPKVP SHECSLHRESALSRYKEKKKTRRYDKHIRYESRKVRAESRTRIKGRFAK MNN
RcBBX8	MASKLCDSCKSATATLFCRADSAFLCINCDTKIHAANKLASRHARVWL CEVCEQAPAHVKCKADDATLCVTCREIHSANPLSRRHERVLVTPFYD SLNSDNSSPVKSGAAVNFLDDRYFSDVDGETTEVSREEAEAASWLLPN PKAMDSPDLNSCQYVFSMDPYLDLDYGAVDPKIEAQEQNSCGTDGV VPVQSKSVQPQIVNEHCFEMDLPGSKPFIYGFNGHCLSQSVSSSSLDVS VVPDGNMLTDVSDPYPKSIGSMVDQLSHPTVQISSADREARVLRREK RKNRKFEKTIRYASRKAYAETRPRIKGRFAKRTEVEIEAERLCRYGVVP SF
RcBBX9	MKIQCDCVNCDDASVFCTADEAALCEGCDHRVHHANKLASKHQRFSL IHPSSSKQSPLCDICQERKAFLFCQQDRAILCRECDVPIHSANEHTQKHS RFLFTGVKLSATS AVYTSSSDSATVTDLKSQINNKSIVSAASISNPPSIPKI

	SATTTTTTKNCGDLLLNDGVGATSSISEYLIETLPGWHVEDLLDFSSKPF GFCADDNGVLPFFDDDIENLSSFSSENMG LWVPQAPCPSLQYSQMG GGGLIGFKESPKDAANMNMIKANNNYNRSMWNDVDAFTVPQISPPSV GSKRTRPF
RcBBX10	MKIRCDVCDKAEATVFCCADEAALCDVCDRRVHHANKLASKHKRFFL LQPTVKDSPQCDICQERHGFLFCQEDRAILCRECDHSIHKANEHTKKHN RFLLTGVKLSTDITLLPTSSSSCSTFSDGGVINNSTDHARVTKSSTKRPR TGCNEQTLSSSSYKVEENCISISDNLVISTNSISEYLMGDQTAEWVRVED LLDVSFDFDGLYEVRAPYI
RcBBX11	MVRHHQREVCSSSTCMEDEMNSMSKPAWLQGLMGETFFGGCGVHEN RRKNEKNVFLHCCLSIHPCLQSHRSHPLLQVRRYVYHDVVR LGDLE KLIDCSYIQPYSNNGAKVIFLNQRPQSRPLSRTNGNKGFAANICFTCDRI LQEPFRFCSLSCKVDHLVLQEEDLSGILYRFDESDF TISQFEGLRMDGSE VIDDDGQMMPSSILEDHELQFRDSSCSNNSDSVMSRSTEAVVKKKNKG ILPGIMLSLGRRKGAPQRAPLS
RcBBX12	MKIQCNCVCEAAEANVLCCADEAALCWACDEKVHAANKLASKHQVRP LSASHMPKCDICQEAVGYFFCLED RALLCRKCDVAIHTANSLVSGHRR FLLTGIVGPEPNPPGSGGGVAGSSSSVKSHSGSLSKFDVNNQLAECK VAPSSVDGMPFAGGSAAGSAPQWPMDEF LGFTDFDQSFGYMDNGSSK ADCGKLGESDSSFLRSSEEEQEDYECIGQVPETSWMVPQVPSPTASGL CWPKSYQGSPDCAVFVPDVCYSEM QNSLHCQQNDISAGPLTSSLT I
RcBBX13	MKECELGLRARMYCDADHASLCWDCDEKVHGANFLVAKHPRRLLC HVCHSPTPWTGSGPKLTPTVSVCENC VQSHRKIDLNQEQESEANEED EEEEFDDEDDVDDESEDEEDDEDENQVVPWSSCSYSQAQPPPAACSS DSEAEISGSKRVRENVVDVSSDDEVGFNGTALYGGSLRPLKRPRLNED QNHLQRSSDGDGGCEAEWRAKIIMSSMQRLEKEVIDGGDHPSAAVLRI WKLSRDEGSR
RcBBX14	MRKCELCDSVAKMYCESDQASLCWDCDIKVHGANFLVAKHSRTLLC HVCQSLTPWNASGPKFGPTVSVCLNCVNTSNKESRNEEEEEEGDDSG GDDDDDDDEEENSIREDDDH EEEENSIGEDDDHDGGGDNDADDNGGG GNDDDDDEENQVVPWSSSFSPPGSTLSDEEECCNESFSKSRSSYSYP CKRRRFNAH
RcBBX15	MEEEMLVPSWLESLLSTAFFSICPTHRDAPRSECNMYCLDCHNGAFCF YCRSSRHRDHQVIQIRSSYHDVVRVNEIQKVL DIGGVQTYVINSARVL FLNERPQPKTAVKGSSHICEICGRSLLDPFRFCSLGCKLVGLKKNGDAS FIFSAKNGEDNEEGRREGLAIRLPSKEVDHQDPLRSEGTMQPKQE QDM YQSTPPPPPPQYSRSRRRKGI PHRAPLGQ
RcBBX16	MVSPKSGTGEGIPCDFCSEQPAVL YCKADSAKLCLFCDQHVGANLLS RKHVRSQICDNCASEPVAFR CSTDNLVLCHECDWDSHGSLRLRRPRS HPDRGLLRLPVASRARLLMGTRSPRHQQESGSGRPDPEPEQGLLLLLL LDRNGGVYQNCGELIPAKRQSSGILGKQKHGIQKQLVELLRDFDGG GENLEAPIPNSNGWQRSDDAHANANANAEGFDVENGRVDGVNVGGA TVTSQPLLQEAPFTSLLMMAEGIVDRQLL WDTNPHTHTHTNTQIWDF NLGKLRDHEETVPLDVAYGSSASGFMKNFSELLKEASVTDTKMFGDV

	YQMNCPIGQDDITFNNSNNPSASQGPATSESNFTVGRPSSGSAFGED NGSGASKDTHIMEQPFLIRSDSLRTVGTKADMELLAQNRGNAMLRKY EKKNRRYDKHIRYESRKARADTRKRVKGRFVKATEAPDGDILIFWK NNLVDPNNVFQSWDATLINPCTWFHVTCNNEDSVTRLDLGNAGLAGP LVPELGKLTNLQYLELFHNNFSGSIPREIGQLVHLVSLDLYKNKLSGPIP ETFGHINSLRFLRVFRNNLTGSIPSSLGKLTNLQILKLNSNKLTGAVPVK VIELVRFGKLAILDVSNNLLAGTVHRTNTTVVIASVDCNSEGDILYSWK TKLVDPNNVLASWNQTSTNPCPWFHVTCNSENIVTRLDLGNAGLSGPL VPELANLTNLQYLELYKNKFYGSIPWEIGHLKELISLDLYQNQLSGSIPE SLGHLNSLRFLRVFGNNITGAIPSSLGNLTACVILKLNSNNLSGVLPVEV IELVRFGNLTVLDVSNNLLEGTIRRTNSTGFAVTKIIPDKPVKN
RcBBX17	MKIQCDVCEKAPATVICCADEAALCAKCDVEVHAANKLASKHQRLLL ESLSNKLPRCDICQDKAAFIFCVEDRALFCQDCDESIHLANSLSANHQR FLATGIRVALTSTCTKDAETSSLEPPVHSSQQVSTKMPTSHASGFSSPW GVDDLLQLSDFESSDKKESLEFGELEWIADMGLFGEQFPQEALAAAEV PQLPVSQSSNYMSYRPPKSNSAYKKPRIEIPEDDEEHFTVPDLGIF
RcBBX18	MKIQCDVCEKAPATVICCADEAALCAKCDVEVHAANKLASKHQRLLL ESLSNKLPRCDICQDKAAFIFCVEDRALFCQDCDESIHLANSLSANHQR FLATGIRVALTSTCTKDAETSSLEPPVHSSQQVSTKMPTSHASGFSSPW GVDDLLQLSDFESSDKKESLEFGELEWIADMGLFGEQFPQEALAAAEV PQLPVSQSSNYMSYRPPKSNSAYKKPRIEIPEDDEEHFTVPDLGIF
RcBBX19	MQQKGHVVPQWLKIMCSTAFFRACIQHPDAKKNDLDHFCIDCLQPIC LNCLAQHLFHKHVKIRRYVYSDVINRRDLCKLFDCSGIQTYFTNRAKV VFLKQRHQPPQQQQQNNNNNNKSREYMCSICHRSLQDNSLYCSVACKV LAIHGNECQRKNLCAGHRFEDNNEEMGAERYREVPFTKRQKLRRKGV PLRAPMF
RcBBX20	MGIQAGWSLPGLTPKPCDTCKTSPAAVFCRADSAYLCLPCDSKVHCAN KLASRHQRVWMCEVCEQAPAAVTCKADAALCVTCDAIDIHSANPLAR RHERVPVEPFLDSAESIVKSTSALNALVPNGDVSSIKVDDADAFLIPNLN FSSKFVDAALDIKPGDMFFPEMESLLDFEYPNPIHNTSSGMDSVVPVQP DPIPPPSVLNQQPSHENCFHIDFCRNKLSSSFSYPTQSLSQSVSSSLDV GVVPDGSSSLDISYPFVRNVNHNHNGIEPGVPVSATASQATQLCGVDREA RVMRYREKRKNRKFKQTIRYASRKAYAETRPRIKGRFAKRTETETDV MDRFYPGLT
RcBBX21	MISNKKAAASAAAASVVGAKTARACDSCIKKRARWYCAADDAFLCQ ACDSSVHSANQLARRHNRVLLKTASSLKSSRTSSNNNSQVPSWHGGFT RKARTPRHGKSVTPRSRFLVPEVGADDVSYEENDEEQLLYRVPVFDP FVAEPCTTSPNSNTDINGNESKAGLLPNYYSDNGNSSSRGFHLPDMDL AEFAADVDSLLGRGLDDDECFIGIQLGLMDCNEKESTTTEDCSSGRVK CEEDEENGYTACQAETEIDLMREPFVLNFEDYDDSPASCAEEEEDEDD KLEVRMSLDGMKTSNEEHNNCNKRKIFLRLDYDAVITTWDSQSKGSP WTCGDRPDFNSDCLPDWMTSSGGELLHYPLSGVVGVHPAMTDGGR EARVSRYREKRRTRLFSKKIRYEVRLNAEKPRMKGRFVKRASFAAS GMLN
RcBBX22	MEKFCEFCALRPVYCKADAHLCLSCDAKIHSANTVFNRRHRTVL CDSCRCRPAYVQCLDHRMFMCNACDRSQHASSSQHCHKRAIRSYTGC

	PTAKDFAALWGLQLNELDNKSSAHL DQTLSTSCASCGSNVNL D ICQ SCSHIECVPGPARFEMGSTCQQYKIYHREGEVHNKTSFILHQILDRLRQ LTEGNPSAQSDLSSSAHYTCKRCNENLYQHLQHSETSGTNFQQKESLI QDLKVDPLPFPFSQPEHLPTNSTIGLPLQTESIWQCRSPVQSSQLWSQN MQDLGVCEELVCRDDFNIPDVDLTFRNFEEIFGGDQDPIRTLLDVKDVS YSSVERDMSLNKSDNCNSRAVDASEASSMYL NESADFIQDTGASNKV ANVSGSMDS DSPCPIQPSSSTLSFSVSRFSTVSSIADCHDTQPSSNSPEMD VGHSEFRANSRIRYKEKKHSRLIEKKLPYPSRKATVEVSKRGKGRCVK TEEDVDSDTIDVTRSY
RcBBX23	MELPKAKNIGGGGGAKTWKVFNGILSKKHSSFLAQPLDRMECNTSSGS DARCLSLAGPAVA AEANKSKEI IELPKQSTKSVFLKF SHILEFSIPTNTGA HKIRRDQLWPCPSLAEGPHGSPIRLV TNENSVNKM KFRSLANEHYYSL HATAHKFHQTHSVSAAQVLYMITEKKAANAMGANTARACDSCLVKR ARWFCGADDAFLCKRCDASVHSANLLASRHERVRLNTSSYKLNHHLA TEAAQEPPLPAWQQGVTRKARTPRGHGNHKS GKDEAGKVLEQPMFV PEMGSEEV DYCCLEDDHESEDLEQMLYRVPIFD PFEAELCNNMTNTDH HEVRIGNVLEDYGARTSSPCDELNLQGLILPSDMELAEFAADVETML GKGLDEDCSDIKGLGLSDGTKEAEQYGM DICDIGIEERKL VKVEEEDQ GMECEFNPSMLDWNLDYDDESAGVLLGGGISTDLEEEEEKVVVLEAE KKRKRICLRLNYEAVITAWASQRSPWTTGVKPELNPDDGWPCMG WGADQIHNLQGHGDSSAAGCVMGMRGNN EQRP GREARVSR YREKRR TRLFSKKIRYEV RKLNAEKRP RMKGRFVKRTSFQLGMGTS
RcBBX24	MGYICDFCGDQRSMVYCRSDAACLCLSCDRNVHSANALSRRHSRTLL CERCNSQPALVRCTEERVSLCQNC DWMGHGASTSAASHKRQTLNCYS GCPSASELSSIWSFVLDLPSTGSGESACEQEMGLMSIAENSTGSTWSPPE NNTRQNASDTFEVNDVGAMDKSDGLVGSSSPALNSAPQVVGQ MAG SANSTLPKLYCHGTKSPGLCEDDDL YDDFDMDEM DLNLENYDELFGV SLNHSEELFKNGGIDSLFGAKNMSRAQDVVAAEGSSIGRVNALQQPAC STAASVDSVMSTKTEPIVSFV PKQAQSNLSFSGVTGESSAGDCQDCGAS SMLLMGEPPWCPPGPES SFQSANRSNAVMRYKEKKKARKFEKRVRYA SRKARADVRKR VKGRFIKAGEAYDYDPLNQTRTRSY
RcBBX25	MKIQC NACEVAEAKVLCCADEAALCWGCDHQIHAANKLASKHHRVP LASSSSMPKCDICQETVGYFFCLQDRALLCRKCDVAIHTANSYVSSH RFLTGVKVGIEIKDTFPTQIGGVGTLVSEKVPLNRSITTSAGTIQGWHL EEYLGSTNPNQNYGVLDNMPSKIYGSYCV
RcBBX26	MQDRSCELCNQQATLYCASDSAFLCFHCDSRVHGANFLVARHVRQPL CSNCKGLAGDAISGEGVPPSVRWLCSSCSPENEDTLSSFDSACSACVSS TESLAGTTTTTKVGLQRSESSVTEVSGKAWDAPARFTKRRMQRARAPT SADARAEGTFENWCKKLGLSRNSALVSSASHALGFCLGRLPGVPLRV SLAASFVWFGVRF CGVSTCQNLRRVEEISGVP AKLILAVDAKLGREL RV RRARPELEEGWAEC
RcBBX27	MDTTMLVPPWLEQLLTSSFFTICRTHGDAARSECNMFC LDCGGDAFCF YCRSSRHKDHQVIQIRSSYHDVVRVSEIQKVL DISGVQTYVINSARVL FLNERPQPKAGIKGVPHICEICSRGLLD PFRFCSLGCKLVGIKRNGDANF TLEARN EEGNGNGRREGSTTTT REEDHHQLREGSQQDMYPTPPPPPS TTRRRKGIPHRAPFGT

RcBBX28	MGSWCQVCNSKVAALYCKADLAKLCLLCDHDIHSANALSLRHTRSQV CDNCRAQSASVVCFTHNISLCHTCDRISPCSSADRTVPVQGFTGCPSAME LASVLGFDLGSQAQNFNLSLDDDHKNLIKHS�GRPKDEIYEQLVEMRM RALAFSAQQQQQQQQVEDAASYSFISIDQARRPTPGQVLASEIHLNSNI EVVTDGRRSRCNAILRYNNKKNKKKTSRQADVIIYLHFFTFSFNIYTL NINYVVHAS
RcBBX29	MLKEESNDAAAGNSWPRICDTCRAAACTVYCRADSAYLCSGCDATIH AANRVASRHERVWVCEACERAPAAFLCKADAASLCTACDADIHSANP LARRHQRPILPISGFHHSPATDSGGQILVGSTLADTTEDGLDEAMDE EDEDEAASWLLNPNVKNNGNGNHNHTNTNNNPSNNNNGFFFFGVEV DDYLDLVEYNSSSCADQNQFSTTSATNDQHNQYAVPHKISYGGDSVV PVQYGDGKVTQMOMQQQHKHNFHQLGMEYESSKAAYSYDGSITHTV SVSSMDVGVPDSTMSDMSVSHPRTPKGTIDLFNGPTIQMPTQLSPMD REARVLRREKKKTRKFEKTIRYASRKAYAETRPRIKGRFAKRTDIEVE VDQMFSTSLMGETGYGIVPSF
RcBBX30	MKNCELCQLPARTYCESDQAILCWDCDFKVHGANFLVARHSRTLLCR ACHAQTPWKASGEKLGHTFTVCERCVARNENRGDDEESQGGNDDDDID TDNDDLDEHDVSDDDDDADGDIDFDEDGENQVVPWAATPPPPAASSS GSEDEASLVNNGERDDSRVAAVFLKRARDDASDLRSQDDFHRSTAR LRRQTACTGHSGRSGADGGAISIDSSKDRRVDLNGSGSRTSPAIESPRR NRQQNSRKLSEGSEAVDLDSSEPRIPQI
RcBBX31	MARLCLNCDGCVHSANALARRHPRWLLCDKCNVQPAIIRCLDENVSL CQSCAWNHSNGVTGMGHQSQAISCYTGCPSLSEISRIWSAVLDGGSAS GGFAASGWESLAGSGVPKNDTDCISNCLERRDSEGSSFGVVSAGKLN VLAESNCTPKFEPWMAPISTIIPSNPNCIQPQCKDQAPFLPQESSQLPKEL QDSSNFKDLGIQDDHDICEGLNMDDVPLDVENGDLFSCSEGPSRYPF EDGELDCLLMDQKNLSVTESNGPLSDNAIQQASPSRQQDCTVGFQSSC VSDSVMAPVMNASSSVNCSLLMNPNCNTRNINLQGLINPTGQVHSSISLS LSSITRETTHPDYQDCGLSPVFLSAEPWDSTLETGSPRARDKAKMRYEE KKKTRTFGKQIRYASRKARADTRKRVKGRFVKSGEEYDYDPLVRSSF
RcBBX32	MFVPSNLLPSWLA VLLTEKFFNACIIHEEERKNEKNIYCLDCCISFCPHC FTPHQSHRLLKIRRYVYHDVIRLDDAARLIDCAFVQSYTSNSAKVVFLN QRPQTKNSRSGSGNMCSTCDRSLQDPYLYCSISCKIDHLIRTEGGLSKYL RQCKFMALPDPGLDDGVLT PDSVLETACSVRTSSGSGGYAELGCLSLA CTATTEVVRKKRSSLALRAACRPVFSVSEISGGRRKGTPHRAPLH

Table S3

Plant name	BBX protein sequences
<i>Arabidopsis thaliana</i>	>AtBBX1 MLKQESNDIGSGENNRARPCDTCRSNACTVYCHADSAYLCMSCDAQVHS ANRVASRHKRVRVCESCERAPAAFLCEADDASLCTACDSEVHSANPLARR HQRVPILPISGNSFSSMTTTHHQSEKTM TDPEKRLVVDQEEGEEGDKDAKE VASWLFPSNDKNNNNQNNGLLFSDEYLNLDYNSSMDYKFTGEYSQHQQ NCSVPQTSYGGDRVVPLKLEESRGHQCHNQNFQFNIKYGSSGTHYNDNG SINHNA YISSMETGVVPESTACVTTASHPRTPKGTVEQQPD PASQMITVTQL SPMDREARVRLRYREKRKTRKFEKTIRYASRKAYAEIRPRVNGRFAKREIEA EEQGFNTMLMYNTGYGIVPSF >AtBBX2 MLKVESNWAQACDTCRSAACTVYCRADSAYLCSSCDAQVHAANRLASRH ERVRVCQSCERAPAAFFCKADAASLCTTCDSEIHSANPLARRHQRVPILPIS EYSYSSTATNHSCETTVDPENRLVLGQEEDEDEAEAA SWLLPNSGKN SG NNNGFSIGDEFNLVDYSSSDKQFTDQSNQYQLDCNVPQRSYGEDGVVPL QIEVSKGMYQEQQNFQLSINCGSWGALRSSNGSLSHMVNVSSMDLGVVPE STTSDATVSNPRSPKAVTDQPPYPPAQMLSPRDREARVRLRYREKKKMRKFE KTIRYASRKAYAEKRPRIGRFAKKKD VDEEANQAFSTMITFDTGYGIVPSF >AtBBX3 MLKEESNESGTWARACDTCRSAACTVYCEADSAYLCTTCDARVHAANRV ASRHERVRVCQSCESAPAAFLCKADAASLCTACDAEIHSANPLARRHQRVP ILPLSANSCSSMAPSETDADNDEDDREVASWLLPNPGKNIGNQNNGFLFGV EYLDLVDYSSSMDNQFEDNQYTHYQRSFGGDGVVPLQVEESTSHLQQSQQ NFQLGINYGFSGAHYNNNSLKDNLHSASVSSMDISVVPESTASDITVQHPR TTKETIDQLSGPPTQVVQQLTPMEREARVRLRYREKKKTRKFDKTIRYASRK AYAEIRPRIKGRFAKRIETAEAEEIFSTSLMSETGYGIVPSF >AtBBX4 MASSRLCDSCCKSTAATLFCRADA AFLCGDCDGKIHTANKLASRHERVWL CEVCEQAPAHVTCKADAAALCVTCDRDIHSANPLSRRHERVPITPFYDAVG PAKSASSSVNFVDEDGGDVTASWLLAKEGIEITNLFSDLDYPKIEVTSEENS SGNDGVVPVQNKLFNEDYFNFDLSASKISQQGFNFQTVSTRIDVPLVP ESGGVTAEMTNTETPAVQLSPAEREARVRLRYREKRKNRKFEKTIRYASRKA YAEMRPRIGRFAKRTDSRENDGGDVGVYGGFGVVPSF >AtBBX5 MASKLCDSCKSATAALYCRPDAAFLCLSCDSKVHAANKLASRHARVWMC EVCEQAPAHVTCKADAAALCVTCDRDIHSANPLARRHERVPVTPFYDSVSS DGSVKHTAVNFLDDCYFSDIDGNGSREEEEEEAASWLLLPNPKTTTTATAG IVAVTSAEEVPGDSPERMNTGQQYLFSDPDYLDLDYGNVDPKVESLEQNSS GTDGVVPVENRTVRIPTVNENCFEMDFTGGSKGFTYGGGYNCISHSVSSSS MEVGVPDPGGSVADVSYPPGGPATSGADPGTQRAVPLTSAEREARVMRY

REKRKNRKFEKTIRYASRKAYAEMRPRIKGRFAKRTDTNESNDVVGHGGIF
SGFGLVPTF

>AtBBX6

MGFGLESIKSISGGWGAAARSCDACKSVTAAVFCRVDSAFLCIACDTRIHSF
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VETFFDSAETA VAKISASSTFGILGSSTTVDLTAVPVMADDLGLCPWLLPND
FNPAKIEIGTENMKGSSDFMFSDFDRLIDFEFPNSFNHHQNNAGGDSLVPV
QTKTEPLPLTNNDHCFDIDFCRSKLSAFTYPSQSVSHSVSTSSIEYGVVDPGN
TNNSVNRSTITSSTTGGDHQASSMDREARVLR YREKRKNRKFEKTIRYASR
KAYAESRPRIKGRFAKRTETENDDIFLSHVYASAAHAQYGVVPTF

>AtBBX7

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CYSGCPSSSELASIWSFCLDLAQQSICEQELGMMNIDDDGPTDKKTCNEDK
KDVLVGSSSIPETSSVPQ GKSSSAKDVGMCEDDFYGNLGMDEVDMALENY
EELFGTAFNPSEELFGHGGIDSLFHKHQT APEGGNSVQPAGSND SFMSSKTE
PIICFASKPAHSNISFSGVTGESSAGDFQECGASSSIQLSGEPPWYPPTLQDNN
ACSHSVTRNNAV MRYKEKKKARKFDKRVRYASRKARADVRRRVKGRFV
KAGEAYDYDPLTPTRSY

>AtBBX8

MGYMCDFCGEQRS MVYCRSDAACLCLSCDRNVHSANALSKRHSRTL VCE
RCNAQPASVRCSDERVSLCQNC DWSGHDGKNSTTTSHHKRQTINCYS GCP
SSAELSSIWSFCMDLNISSAEESACEQGMGLMTIDEDGTGEKSGVQKINVEQ
PETSSAAQGM DHSSVPENSSMAKELGVCEDDFNGNLISDEVDLALENYEEL
FGSAFNSSRYLFEHGGIGSLFEKDEAHEGSMQQPALSNNASADSFMTCRTE
PIICYSSKPAHSNISFSGITGESNAGDFQDCGASSMKQLSREPQPWCHPTAQ
DIASSHATTRNNAV MRYKEKKKARKFDKRVRYVSRKERADVRRRVKGRF
VKSGEAYDYDPMSPTRSY

>AtBBX9

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GKIWSSTLEPSVTSLVSPFSDTLLQELDDWNGSSTSVVTQTQNLKDYSSFFP
MESNLPKVIEEECSGLDLCEGINLDDAPLNFNASNDIIGCSSLDNTKCYEYE
DSFKEENNIGLPSLLLPTLSGNVVPNM SLSMSNLTGESNATDYQDCGISPGF
LIGDSPWESNVEVSFNP KLRDEAKKRYKQKKS KRMFGKQIRYASRKARAD
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>AtBBX10

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DFNRMWSSILEPPVSGLLSPFVGSFPLNDLNTMFDTAYS MVPHNISYTQNF
SDNLSFFSTESKGY PDMVLKLEEGEEDLCEGLNLDDAPLNFVDVGDDIIGCSS
EVHIEPDHTVPNCLLDK TNTSSFTGSNFTVDKALEASPPGQQMINTGLQL
PLSPVLFGQIHPSLNITGENNAADYQDCGMSPGFIMSEAPWETNFEVSCPQA

RNEAKLRYKEKKLKRSFGKQIRYASRKARADTRKRVKGRFVKAGDSYDY
DPSSPTTNN

>AtBBX11

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CPSVPELLAIVGLDDLTLDSGLLWESPEIVSLNDLIVSGGSGTHNFRATDVPP
LPKNRHATCGKYKDEMIRQLRGLSRSEPGCLKFETPD AEIDAGFQLAPDLF
STCELVIETAIGCVFLCLSNDFPAYKSLLSI

>AtBBX12

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VPYDVSCKKQSFSFGRSKQVVFEQLELLKRGFVEGEGEIMVPEGINGGSGIS
QPSPTTSFTSLLMSQSLCGNGMQWNATNHSTGQNTQIWDFNLGQSRNPDE
PSPVETKGSTFTFNNVTHLKNDRTRTTNMNAFKESYQQEDSVHSTSTKGQET
SKSNNPAAIHSKSSNDSCGLHCTEHIATSNRATRLVAVTNADLEQMAQN
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>AtBBX13

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LIVPSDTTFKKRGSCGSSCGRYKQVLCKQLEELLKSGVVGGDGDGDRDR
DCDREGACDGDGDGEAGEGLMVP EMSERLKWSRDVEEINGGGGGGVNQ
QWNATTTNPSGGQSSQIWDFNLGQSRGPEDTSRVEAAYVGKAASSFTIN
NFVDHMMNETCSTNVKGVKEIKDDYKRSTSGQVQPTKSESNNRPITFGSEK
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>AtBBX14

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FPMMPLSFKSSDEEDDDNAESCLNGLFPTDMELAQFTADVETLLGGGDREF
HSIEELGLGEMLKIEKEEVEEEGVVTREVHDQDEGDETS PF EISFDYEYTHK
TTFDEGEDEKEDVMKNV MEMGVNEMSGGIKEEKKEKALMLRLDYESVI
STWGGQGIPWTARVPSEIDLDMVCFPHTMTMGESGAEAHHHNHFRGLGLHL
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SSIGVAH

>AtBBX15

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KIEFPMIRSGLMIEEEEDNAESCLNGFFPTDMELEEF AADVETLLGRGLDTE
SYAMEELGLSNSEMFKIEKDEIEEEVEEIKAMSM DIFDDDRKDVDGTVPFEL
SFDYESSHKTSEEEVMKNV ESSGECVVKVKEEEHKNVLMMLRLNYDSVIST

WGGQGPPWSSGEPPERDMDISGWPAFSMVENGGESTHQKQYVGGCLPSSG
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LAAAASPLGVNY

>AtBBX16

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KCENGGSKSDSDREASNDKDRKTSFLRLDYGAVISAWDNHGSPWKTGIKP
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>AtBBX17

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RSRYEKKPQQKIDDERREDPRVPEIGGEVMFFIPEANDDDMTSLVPEFEGF
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QYLMSCCKDYDNVITVSEKTEEIEDCYENNARHRLNYENVIAAWDKQESP
RDVKNNTSSFQLVPPGIEEKRVRSEREARVWRYRDKRKNRLFEEKIRYEV
KVNADKRPRMKGRFVRRSLAIDS

>AtBBX18

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SNAPSCDICENAPAFFYCEIDGSSLCLQCDMVVHVGGKRTHRRFLLLRQRI
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GSHNQEEGIDVNNANNHEHE

>AtBBX19

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SSNNNGIDVNNENNHEPAGLVPGVPFKRESEK

>AtBBX20

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VKISASPSAYPRASNSNSAAAFGRAKTRPKSVSSEVPSSASNEVFTSSSSTT
SNCYYGIEENYHHVSDSGSGSGCTGSISEYLMETLPGWRVEDLLEHPSCVS
YEDNIITNNNNSES YRVYDGSSQFHHQGFWDHKPFS

>AtBBX21

MKIRCDVCDKEEASVFCTADEASLCGGCDHQVHHANKLASKHLRFSLLYP
SSSNTSSPLCDICQDKKALLFCQQDRAILCKDCDSSIHAANEHTKKHNRFLT
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QPFSKINGGDASVNQWGSTSTISEYLMETLPGWHVEDFLDSSLPTYGFSKS
GDDDGVLPYMEPEDDNNTKRNNNNNNNNNNNTVSLPSKNLGIWVPQIPQT

LPSSYPNQYFSQDNNIQFGMYNKETSPEVVSFAPIQNMKQQGQNNKRWYD
DGGFTVPQITPPPLSSNKKFRSFW

>AtBBX22

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KVGLESIDTGPSTKSSPTNDDKTMETKPFVQSIPEPQKMAFDHHHHQQQQE
QQEGVIPGTKVNDQTSTKLPLVSSGTTGSIPQWQIEEIFGLTDFDQSYEYM
ENNGSSKADTSRRGDSDDSSMMRSAEEDGEDNNNCLGGETSWAVPQIQSP
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>AtBBX23

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NPSVILSP

>AtBBX24

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VALTSTICSKEIEKNQPEPSNNQKANQIPAKSTSQQQQQPSSATPLPWA VD
DFFHFSDIESTDKKGQLDLGAGELDWFSMDMGFFGDQINDKALPAAEVP ELS
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>AtBBX25

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RVALSSTSCNQVEVEKNHFDPSNQSLSKPPTQQPAAPSPLWATDEFFSYSDL
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>AtBBX26

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AHMPHV VHHNNNNNHQQQHVG GHQRR AEMFERSCHGDNNCERWMFAM
RCELCVASNSNAV VYCPHTNQILCDSCDRMIHSHEDAVPPHSRCKLCVICK
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FGR

>AtBBX27

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HQNIQDIGVCEDTICSDDDFQIPDIDLTFRN FEEQFGADPEPIADSNNVFFVSS

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>AtBBX28

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AENQVVPWSAAAQVPPVMSSSSSDGGSGGSVTKRTRARENSDLLCSDEI
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>AtBBX29

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>AtBBX30

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>AtBBX31

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>AtBBX32

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*Cucumis
melo*

>CmBBX1

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>CmBBX2

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>CmBBX3

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DGVVPEQSNPGTESTTPPTDYSTRNLSGFQLCSTRSKPDAMSYPSQNLSHSVS
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>CmBBX4

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>CmBBX5

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>CmBBX6

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SVSPPFVEVGLSLLLLFVCEVDNHKV

>CmBBX7

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DLNSSKFEPMPDYPYLDLDYGHVDPKLEAQEQNSSGADGVVPVQSKGVHLS
SANDRCLGIDFTGTGSFPYGHNPQSISHSVSSSSIEVGVPDGNAMTDVSNPY
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>CmBBX8

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DFLMDFEIIPPLVVGVKNERHEDNEDDESGITNKNKRRVLSRLDCEAVIA
AWGNLQSPWTNGQRPDFDPDQWPNSMEVCEVRYGQRCGEHGLRTAAMG

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PTLPFITIN

>CmBBX9

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VKNGELEMEETKIVKNKKKISLSLDSEAVIIAWGSRGTPWTSGDRPNLDLDY
YWPDYMGTYESDCYYQPYGEFGSGIGRHA VTGVEGEREARVSR YREKRRT
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S

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>CmBBX13

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>CmBBX14

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>CmBBX17

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>CmBBX19

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>CmBBX21

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>CmBBX22

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>CmBBX23

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*Cucumis
sativus*

>CsBBX1

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>CsBBX9

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>CsBBX16

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>CsBBX17

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>CsBBX22

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>SIBBX3

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>SIBBX4

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>SIBBX5

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>SIBBX7

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NEQPKIVQLQCSDVVPADCAMSNTGERADSSLCIPVRQVRSSISHPLSGLTGE
SSAGDHQDCGVSPILLMGEPPWYSPGPEGLAGGSRDSALTRYKEKKKKRM
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VFDPMLEAFYNPVADEGEQKPACSLLMPSLAETSPEFASGGSAEADGLSVSF
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WF

>ZmBBX15

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AAKASSLESGGGGGGSGSGSSISEYLTNICPGWRVDDLLFDDSAFSAASKA
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VVVPTAAKQQQGCVRERTWDSDSDSDFAVPELPQPPQAKKARPAPAPAPT
FWCF

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FLAQDFARFPHADSVPNDGSNCGAAVDFDFGGGVAVAAKQPSYSSYTAAS
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SLDVGAVPERSDGMAGRLATPTPATATESREARLMRYREKRNRRFEKTI
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PSYRYVLDFAAAGYGVVPTF

>ZmBBX17

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WAVDELLQFSDYESSDKLHKEPTLGFKLEWFADIDL FHEQAPKASRTLAEV
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>ZmBBX18

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YFNEQPKAMQIECGNVVSADCAMSNPGARADSSLCIPVRQVRSSISHSLSGLT
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>ZmBBX19

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RPHVKS V GELL SRKL V VVPEVSPIESSEERKAE EEEEEEEEGQLLYCVPTFDRA
LAELCSPPPPVDDPTASSCCRDDVDGAVENNTKAPPVVVAESPVQQLPDSFA
GFGPTDAELREFAADMEALLGQGLDDGNELDRSFYMESLGLMAQQAEDVG
RIKMEPN GIVSSRSRGEGAPGFGPTMKPEASSAAAEVLDTDFNCCSPTVMM
DNEDEDSFEQKASASNA AAAAAAGTQFLKRSLDLSLNYEAIIESWGSSPWTG
QRPSVQLDDFWPHAHLTGWMAGGGRLGGEAAVTPRLGMGGGREARVTRY
REKRRLRLFAKKIRYEVRLNAEKRP RMKGRFVKRPAAAAGGGGEELPLPP
RAPSPSLPIEVARVAAQSPCGVPIGVRPRPCPRECRGR

>ZmBBX20

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SATAAASPAPAVPKCDICQEASGYFFCLEDRA LLCRDCDVAIHTVNSFVSVH
QRFLTGTGVQGLDPADPVPIAEKHVNASGGSVKQSVRHLPRRSPGVQFSVE
GSASVPSKNVSN G DYSRQNSVPTARAEVVDWTKNNTTIQSVESPPKYMSEES
PTLLQSSQTTTVFSNQINGNSDGTYHLSFSSGNVTD SLPDWPVDEFFSNSEYV
PNLGFSEHGSSKGDNAKLESAGGSLQCRLAEGSIAEELLGQVPGLITDDYMS
RVPENSWTVPEVPSPTASGLNWHGNLCFPAYDSTM FVPEITSLQNSQNQFT
VPSSFKR RRRREY

>ZmBBX21

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TNICPGWRVDDLLLDSSFSAPSKTGYS DGHQVPSVDADLFDVVASGRPG
KRVGGAALGFDKAPASVVVVPTQGCVTERTWNSDS DVFAVPELPQPPPAKK
ARPAPAPTFWCF

>ZmBBX22

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RVPILDPALAEFCSPPPLEDAAGLALDASVCNEDGAIEDPAKPDPAAPLAQFC
PVSGHFNFGPTDAELREFAADMEALLGHGLDDGNEEDSSFYMETLGLLDPM
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DTATDERAASSDTGADAQFLQTSLSLTLNYEAIQSWGSSPWTGGGERPHVK
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RYGTRCASSTPRSGHG

>ZmBBX23

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ATGSLTDWSAVQEEFGSPAPRLAEAAPRATPKRTPRAPAFGAGQGRIAGGV
MDWPLGEFFRGVSDFNNGFSFGESGNSKADSGKLGDSAGGSPYYRSSEER
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>ZmBBX24

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NKLVRCDICENSPAFFYCEIDGTSCLSCDMTVHVGGRKTHGRYLLLRQRVE
FPGDKPGHMDDVPMEIQDPENQRDQKKPPKEQTANHHNGDDPATDGNCD
QGNIDSKMIDLNMRPVRTGQESNSQVCHAHCD

>ZmBBX25

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EGSASVPTKNVTNGDCSRQNFVPTARAEEVDWTMNNSTIRSVESPPKYISEE
SPTLLQSSQTTTVFSNQINGNSDGAYHLSFSGGNVTDSPDWPVDEFFSNSEY
GPNFGFSENGSSKGD TAKLGGAGGSPQCRLAEGSVAEELLGQVPGLITDEYM
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>ZmBBX26

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PRGGRAKSDVRTLSRRLVPHAAGGDSPDGRNDEGEFEAEPEEEVLYRVP
VFDPALAEFCSPQPLEDAAALASSCNEDGAVEDPAKTDRETPAAAPLVQFFP
DGGHANFGPTDAELREFAADMEALLGYGLDDGNEESSFCMETLGLLEPVE
VGEDASRVKVETDAGSACEASGTLACALELLDPDASDEMLDIDFNYGSPQD
TTTTENAASSHTGTDGQFLQTSLSLTLNYEAIQSWGSSPWTGGAERPHVKL
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>ZmBBX27

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AQVHSANPLAGRHRQVPVPLPAAAVPAASVLAEEAAATAAAVAGDKDEEV
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NHINSNTKQYGMQEQLLLHKEFGDKEGSEYVVPVSQVGQQQSGYHRVIGTE
QAASMTPGISFSSSMEVGIVPDNMATDMPSSGILLTPAGAISLFSSGPPLQMP

LHLASMDREARVRLRYREKKKSRKFEKTIRYATRKYAEARPRIKGRFAKRSS
DMDVEVDQMFSAAALSSDGSYGTVPW

>ZmBBX28

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RIWSFVSDIPNVAPEPNCEQGISMMSISDSGVSNDNAAGDSILLDIASATLVS
DIGTCDKLLVGSSSGAGVNLLPLATGQTETAGSVDSTPDKDSCMQVPYTPDK
DMFSKDSIYEDFCVDDADLAFENYEELFGTSHIQTEQLFDDAGIDIYFEMKEA
PAGNSTEQSKLKQPANSNAVSAADSGMSNPGVKGDSSVCTPLRQARSSLSLSF
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>ZmBBX29

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KEGATTEVFFADSDPYLDLDFARSMDDIKTIGVQGGPPELDLAGAKLFYSDD
SMNHSVSSSEAAVVPDAVAGAAPEVAVVCRGLEREALRMRYREKRKSRRF
DKTIRYASRKAYAETRPRIKGRFAKRTPGAGADGEEPLEEHEEIYSSAAAAV
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>ZmBBX30

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SEYLTGTLPGWHVEDFLVDDAYASDVGACSSDGLYQGGQDGGQISGVLQEA
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W

>ZmBBX31

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WARRTGLTAADARRRAAAAARALRAHAHGLASARVAPRVAMAAALWRE
VAGRGGTGGGGHGHGEALRRLEACAHVPAGLVVAVAKSMARARGRGDEA
DTDAAAEGWDECAWAGPKSSPPRP

Table S4

Type	Domain organization (N-terminus to C-terminus)	Number
I	B-box1 + B-box2 + CCT	3
II	B-box1 + B-box2 + CCT	6
III	B-box1 + CCT	2
IV	B-box1 + B-box2	7
V	B-box1 only	14

Table S5

Name	Amino acid sequences
RcPAL1	MESITQNGHHHQNGIQNGSLDDGLCIKTESIKTGYSVSDPLNWGAAAE SMTGSHLDEVKRMVTEYRKSVVKLGGETLTISQVAAIANHDSGVKVE LAESARAGVKASSDWVMDSMNKGTDSYGVTTGFGATSHRRTKQGAA LQKELIRFLNAGVFGNGTESAHTLPHSATRAAMLVRINTLLQGYSGIRF EILEAISKFLNHNITPCLPLRGTTASGDLVPLSYIAGLLTGRPNNSKAIGPK GETLTAAEFAQVGISSGFFELQPKEGLALVNGTAVGSGLASMVLFT NILALLSEILSAIFAEVMQKGPEFTDHLTHKLKHHPGQIEAAAIMHILD GSSYVKAACKLHEQDPLQPKQDRYALRTSPQWLGPQIEVIRFSTKSIE REINSVNDNPLIDVSRNKALHGGNFQGTPIGVSMNDNTRLAIASIGKLMF AQFSELVNDFYNNGLPSNLSGGRNPSLDYGFKGAEIAMASYCSELQFL ANPVTNHVQSAEQHNQDVNSLGLISSRKTAEAVDILKLMSSFTLVALC QAIDLRHLEENLKSTVKNTVSQAKRVLTGTVNGELHPSRFCEKDLLM VVEREYLFTYIDDPESATYPLMQRLRQVLVEHALTNGENEKNANTSIF QKITAFEEELKTILPKEVESTRAAYESGNAIPNRIVECRSYPLYKFVRE ELGGEFLTGEKVRSPGEECDKVFTAMCQGNIDPILDCLSGWNGEPLPI C
RcPAL2	MESFKNCNAAVESFCEGHDPNWNMAAESLKGSVDELKRMVSDYR KPVVKLGGETLTIGQVAAIASHDGGVRVELAEEKRAGVKASSDWVMD SMGKGTDSDYGVTTGFGATSHRRTKNGGALQRELIRFLNAGIFGSSLDST HILPHTATRAAMLVRINTLLQGYSGIRFEILEAITKFLNGNITPCLPLRG ITASGDLVPLSYIAGLLIGRPNSKSVGPKGETLSPAEAFKLAGIEGGFFEL QPKEGLALVNGTAVGSGMASMVLFDVNTLAVLSEIMSAIFAEVMQKG PEFTDHLTHKLKHHPGQIEAAAIMHILDGSSYVKEAKKVHEMDPLQK PKQDRYALRTSPQWLGPQIEVIRAATKMIEREINSVNDNPLIDVSRNKA LHGGNFQGTPIGVAMDNTRLAIASIGKLMFAQFSELVNDYNNGLPSN LSGGSNPSLDYGFKGAEIAMASYCSELQFLANPVTNHVQSAEQHNQDV NSLGLISSRKTS EAVDILKLMSSFTLVALCQAIDLRHLEENLKIVVKTTV SNVAKRTLTVSPNGELHPSRFSEKDLLTVVDREYLFYIDDPCLATYPL MQKLRAELVEHALKNGERERSANTSIFHKISAFEEELKTILPKEVDNARI EIENGKSEIPNRIKECRSYPLYRFVREELGTSLLTGEKIKSPGEECDKLFN AICAGKLIDPLLECLKEWNGAPLPIS
RcC4H	MDFLLLEKTLLGLFVAVVVAITVSKLRGKKFKLPPGPIPVFVFGNWLQ VGDDLNRNLTDMAKKFGDVFMRLRMGQRNLVVVSSPELAKEVLHTQ GVEFGSRTRNVVFDIFTGKGQDMVFTVYGEHWRKMRRIMTVPFFTNK VVQQYRYGWESEAAAVVEDVKKHPEAATNGMVLRRRLQLMMYNN MYRIMFDRRFERSERRESRLAQSFYNYGDFIPVLRPFLRSYKICKEV KEKRIQLFKDYFVDERKKLASTQATTNEGLKCAIDHILDAQQKGEINED NVLIVENINVAAIETTLWSIEWGIAELVNHPEIQKKLRVELDTVLGRG VQITEPEIQKLPYLQAVVKETLRLRMAIPLLPHMNLNEAKLGGFDIPA ESKILVNAWWLANNPAAHWKKPEEFRPERFLEESKVEANGNDFRYLPF GVGRRSCPGIILALPILGITLGRVLQNFELLPPPGQTQLDTTEKGGQFSL HILKHSTIVMKPRT
Rc4CL1	MAHNSATPTPATVDPRSGFCKSNSIFYSKRKTEPLPPNDSLDVTTFISSQ AHRGNIAFIDAATGRHLYADLWRAVYSVASSLSMDGIRKGHVILLLS PNSIFFPVVCLAVMSLGAIITTTNPLNTTREISKQVGDSKPVLAFTTRQL

	LPKLAGSPLSSNSIVVIDDDDVGVQVPNNNSSKNIFALTGLGAMMKRQPT GGRFREAINQDDTATLLYSSGTTGASKGVVSSHRNLIATVRTVLGRFVS QVAEEPQTFLCTVPMFHIYGLATFATGFLTSGSTIVVLSKFEMHDMLSA IGRYKVTYLPLVPPILVALANGADQIKAKYDLSSLHSVLSGGAPLSKEV IEGFLEKYPTVGISQGYGLTESTGLGASTDTLEESRRYGTAGMLSPNME AKIVDPDTGRALTVNQTGELWLKGPTIMKGYFCNEEASASTVDSQGW LRTGDLCYIDDDGFIFVVDRLKELIKYKAFQVPPAELEALLLTHPQIAD AAVIPFPDEKVGQFPMAYVVRKAGSNLSETAVMDFVAKQVAPYKRIR KVAFIASVPKNPSGKILRKDLIQLATTSTSKL
Rc4CL2	MEKSGYGRDGIFRSLRPPLVLPRDPNLTMVSFLFRNSSSYPHKPALIDD DSSETLSFSQLKLMVIKVAHGLLHLGIKKNDVVLIAPNSIQFPICFLGII AIGAIATTSNPLYTVSELSKQVKDSNPKLVITVPELWEKVKGFNLPAVIL GQKTSSSQTESSSRIVGFHDLVESSGPVSDFPSVNVKQTDTAALLYSSG TTGMSKGVILTHRNFIASSLMITMDQELAGEMHHVFLCVLPMFHVFG AVITYSQLRKGNNAVISMARFNLEKILMAVEKYKVTHLWVVPPIIALSK DSVVKKYNLSSLKHIGSGAAPLGKELMEECAKIIPQGVVSQGYGMTET CAIVSVENTLVGPRHSGSAGSLASGVESQIVSVDTLKPLPPKQLGEIWW RGPNNMIGYFNNPEATKLTLDKNGWIHTGDLGYFDESGQLFVVDRIKE LIKYKGFQVAPAELEGLLVSHPEILDAVVIPFPDAEAGEVPVAYVVRSP NSSLTEEDIKSFIASQVASFKRLRRVTFINTVPKSASGKILRRELIEKVR KI
Rc4CL3	MADHTGSSCIDPYSGFCSKTKTFHSLRPKAPLPPETTPLSITHFIFSQLQA SPPPPSTPALIDPATRHCILYPDFTRRVQSLAAALQSQLNLSNGHTAFVL SPNSLHLPILFFSLFSLGVTVSPSNPASTNPEISRQIHLKPVVAFATSATA HKIPNSLRYGTVLLDSAEFESMMTCGRTPDLPRARVYQSDTAAILYSS GTTGMVKGVALTHRNWISMLAAAFVRPSSPPAVWLCTVPFFHVYGF GVCMRVLAFFGETLVISGRFDLRSTLSAIEEFRITHAAWAPPVVVALVK LGSELDGYDLSSLQVIASGGAPLAKSVIDKLLKRLPNVQLAQQGFGLTET SGRVFGTVGPNETRVEGAVGKLMSNFEAKIIDPETGIALPPLMPGELWL TGPFLMKGYIGDEDATASTMDSQGWFKTGDLCYIDEQGYLFFVVDRIKE LIKYKGYQVAPAELEHLLLSHPDIVDAAVVPYPDEEVGQVPMFVVR VGSALDESQIKDFIAKQVAPYKKIRRVTFINEVPKSAQGKVMRKELIKL ASSKL
Rc4CL4	MENKRQDNHEFIFRSKLPDIYIPNHLPLHTYCFENLSQFHDRPCLINGNT GETFTYAEVELTSRRVAAGLDKLGIQQNDVVMLLLQNCPEFAFAFLGA SYIGAMSTTANPFYTPAEVAKQAKASNAKLIITQSPYVDKVKDFAKLN DVKVMCVDETLSEDVLHFSELTSADSETPAVKINPDDVVALPYSSGT TGLPKAVAQQVEGENPNLYFHKEDVILCVLPLFHIYSLNSVFLCGLRVG AAILLMQKFEINKLLELVEKEKVTIAPFVPPIVLSIAKCPDLHRYDLSSIR MVMSGGAAPMGKELEDTVRAKLPNAKLGQGYGMTEAGPVLSMCLAF KEPYEIKSGACGTVVRNAEMKIIDPDTNESLPRNQSGEICIRGSQIMKGY LNDPEATENTIDKEGWLHTGDIGFPSRPAELEAMLISHPNLSDAAVVSM KDEAAGEVPVAFVVRNNGSKISEDNIKQYISKQVVIFYKRISRVFFTDKIP KAPSGKILRKDLRTRLAAGLPN
Rc4CL5	MLTHKGLVTSVAQQVDGENPNLYFHKEDVILCVLPLFHIYSLNSVFLC GLRVGAAILLMQKFEINKLLELVEKEKVTIAPFVPPIVLSIAKCPDLHRY DLSSIRMVMSGGAAPMGKELEDTVRAKLPNAKLGQGYGMTEAGPVLS MCLAFKEPYEIKSGACGTVVRNAEMKIIDPDTNESLPRNQSGEICIRGS

	QIMKGYLNDPEATENTIDKEGWLHTGDIGYIDDDDELFIVDRLKELIKY KGFQVAPAELEAMLISHPNLSDAAVVSMKDEAAGEVPVAFVVRNNGS KISEDNIKQYISKQVVFYKRISRFFTDKIPKAPSGKILRKDLRTRLAAG LPN
Rc4CL6	MENKRQDNHEFIFRSKLPDIYIPNHLPLHTYCFENLSQFHDRPCLINGNT GETFTYAEVELTSRRVAAGLDKLGQQNDVVMLLLQNCPEFAFAFLGA SYIGAMSTTANPFYTPAEVAKQAKASNAKLIITQSPYVDKVKDFAKLN DVKVMCVDETLSEDLHF
Rc4CL7	MARTSSYNFNSQIPETPNIEKHKSLATQQHPWWFSPDTGIYHSKQPSIN LPTDPFLDVVSFVFSHKHNGVSALVDSSSGFSISYSKLYSLVKSMASGL HRMGISQGDVVLNLLPNSIYYPIVFFGVLYVGAVVTTMNPLSSVVELK KQIADCNACLAFTGSENVDKLQALGVPAIGVPENNVSDSTKEFFSVFHE LVYGFSLAPRPVIKLQDTAAILYSSGTTGVSKGVLVTHGNFIATVELF VRFEASQYESSLNNAVYLAVLPLFHIYGLSLFVVGLLSLGSRIVVMKKF DVNEMVKAIDRYKVTHFPVVPILTALTKIAKDVGAHSLQSLKQVSCG AAPLSMKSIEDFVQTLPYVDFIQGYGMTETTAVGTRGFNTEKVRKYSSI GLLAPNMQAKVVDWNTGSFLPPARIGELWLRGPSIMRGYLNNAETM STIDDDGWLHTGDIVYFDEDDGYLNICDRIKEIKYKGFQIAPADLEAVLI SHPEILDVAVTGATDEECGEIPVAFVVRKHSSSELSQQDVMQDYVARQVS PTRRSERWCLQTQYQDLQQGRSSEGSSGFSWLLDCAWDFASYCFSRD RSCNRNFLAASFVAAAIL
Rc4CL8	MAEHTDNPSRWIDPKSGFCPRTKTFHNFRPPVPLPPLSQPLSLAQYTLSL LQSSTTAPTPVLIDATSGRHVSYGQFLAQFHSLTRSLRSLISKGQVAFI LSPPSLHVPVLYFSLALGVVVSPANPIGSESEVAYQVRLCKPAVAFAT SATAHKLKGLTTILLDSPEFLSLIDGSRPGTRPDYPVEVNQTDAAAILY SSGTTGRVKGVISTHRNFIALIAGMHANRLEPDPNEPVVQAVSMFTLPL FHVFGFMLIRAVSMGETMVLMERFNFEAMLRAVERFKVTYMPVSP VIVALANSELAQKYDLSSLRLLGCGGAPLGKEVAERFNKFPNVEIVQ GYGLTETGGGATRMIDPEEAKNYASVGRLAENMEAKIVDPETGEALPP GQRGELWLRGPTVMKGYVGDDKATAETLDKDGWLKTGDLCTYFDD GFIYIVDRLKELIKYKAYQVPPAELEQILLSHPDIAAIVIPYPDEEAGQI PMAYVVRPGRNNITEAIVMDFVAKQVAPYKKIRRVSFINSIPKSPAGKI LRRELVTLALSSGSSKL
Rc4CL9	MAAQTPQHDIYRSKLPDIHIPNHLPLHSYIFQNKSHLSSKPCIINGTTG DIHSYADVELTSRKVASGFNKLGIKQGDVIMLLLNTPEFVFAFLGASF CGAMTTAANPFFTPAEIAKQAKASKAKLIITLACYYDKVKDLSCDEVK LMCIDSPPPSSCLHFSELTQSDENDVPDVPDISPNDVVALPYSSGTTGLP KGVMLTHKGLVTSVSQQVDGENPNLYYSSDDVVLCLPLFHIYSLNSV LLCGLRAGAAILVMQKFEIVSLELMQKHRVSVAPIVPIVLAIKFPDL DKYDLGSIRVLKSGGAPLGKELEDTVRAKFPNVTLGQGYGMTEAGPV LTMSLAFAKEPFVVKPGGVGLSSETQS
Rc4CL10	MKGYLNDPEATRTTIDKQGWLHTGDIGFVDDDEELFIVDRLKELIKYK GFQVAPAELEALLVTHPNISDAAVVPMKDDAAGEVPVAFVVRNNGSQI TEDEIKQFISKQVVFYKRINRVFFIEAIPKSPSGKILRKELRTKLAAGFAN

Rc4CL11	MHKVGYTLEILDILMKRGDCMLWIDLKSSSSVMVIRFPDVKAGEVPIA CVVLAPNSLLTEQDILKFVEKQVAPLHHA KDYGA
Rc4CL12	MISIASNNNNHNNNNNRVVETPTKPEISPNIISDVISTSQTQPEQEQQPPT TTNHHVFKSKLHRKILHLLRNPLFFPKDRSGPIQARHPQRRCGHDPSPE LRGVRLLIHGRFHDRRRHHRQPFLHRLRNLQAVGGIQRQAHHTIPV RRQAPTARPALSSGHHRRPPENCLHFSVLS DANENELPQVSIDPDDPVA LPFSSGTTGLPKG VILTHKSLITSVAQQVDGENPNLYLKGDDVVL CVLP LFHIFSLNSVLLCSLRAGAAVLVMLKFEIATLLELIQRYRVSVA AVVPPL VIALTKNPMVADYDLSSIRVVLSGAAPLGKELEEALRSRVPQAVLGQG YGMTEAGPVLSMCLAF AKQPFPTKSGSCGSVVRNAELKVVEPETGRSL GYNQPGEICIRGSQIMKGYLNDSEATATTVDVEGWLHTGDVGYVDDD DEVFIVDRV KELIKFKGFQVPPAELESLLVSHQSIADAAVVPQKDDAAG EVPVAFVVR SNGGNELTEEAVKEFIAKQVVFYKRLHKVYFVHAIPKSP AGKILRKDLRAKLAAAATPNPRHPI
RcCHS1	MVTVDEV RKAQRAEGPATVLAIGTATPPNCVDQSTYPDYYFRITKSEH KTELKEKFQRMCDKSMIKKRYMYL TEEILKENPSMCEYMAPSLDARQ DMVVVEIPKLGKEAATKAIKEWGQPKSKITHLVFCTTSGVDMPGADY QLTKLLGLRPSVKRLMMYQQGCFAGGT VLR LAKDLAENNRGARVLV VCSEITAVTFRGPSDTHLDSL VGQALFGDGAAAIIVGADPLPEIERPLFE LVSA AQTILPDS DGAIDGHLREVGLTFHLLKDVPGLISK NIEKSLNEAFK PLDITDWN SLFWIAHPGGPAILDQVEAKLGLKPEKLEATR NILSEYGNM SSACVLFILDEVRRKSAANGHKT TGEGLEWGVLF GFGPGLTVETTVVLH SVAAST
RcCHS2	MVTVEEV RKAQRAEGPATVLAIGTATPPNCVDQSTYPDYYFRITNSEH KTELKEKFQRMCDKSMIKKRYMYL TEEILKENPSMCEYMAPSLDARQ DMVVVEIPKLGKEAATKAIKEWGQPKSKITHLVFCTTSGVDMPGADY QLTKLLGLRPSVKRLMMYQQGCFAGGT VLR LAKDLAENNRGARVLV VCSEITAVTFRGPSDTHLDSL VGQALFGDGAAAIIVGADPLPEIERPLFE LDVPGLISK NIEKSLNEAFKPLDITDWN SLFWIAHPGGPAILDQVEAKL GLKPEKLEATR NILSEYGNMSSACVLFILDEVRRKSAANGLKT TGEGLE WGVLF GFGPGLTVETTVVLH SVGVTA
RcCHI1	MMVSFRFPFSFSQPPPATCSSATSRPFS AVTAAVTVAAGATAFAGVAA VSQTNPTNQTHPFLQNALNFFFANRSLPLWGSLSLNDTPASVVD SKTG VAFPSVLAESRRL LGIGLRRKRVLGLKNIDVYAYGIYADGNDVKKLLS EKYGKLSLSELQENKEYNDVLLET DIGMTVRLQIVYGKLSIGSVRS AF E ESVGTRLQKFGGSDNQELLQRFTSQFKDEIKIPRGSIIDLSREPGYVLR T TIDGNDVGSIQSKLLCKSILDL YIGEEPFDKQAKEDVKLN LASVLQE
RcCHI2	MAPPITGIQIEATSFPPTVKPPGSGNSLFLGGAGVRGLEIQGNFVKFTAIG VYLEDKAVPELAVKWKGKTAEELTESVQFFREIVTGPFEKFTQVTMILP LTGQQYSEKVS ENCVAIWKKFGIYSDAEAKAIEKFTEVFRDQTFPPGAS ILFTQSPNGSLTIGFSKDGSIPEVGNAV IENKLLSEAVLESII GKQGVSPA ARQSVAARLSELLKESDDSVTGNGKVEKCTKEAEVEA
RcCHI3	MQPWDPLLQNTAMGAVGTEAVLVDEIPFPSVITTTKPLSLLGHGITDIEI HFLQIKFTAIGVYLDPEIVGHLQQWKAKKGTELAEDDGGFFDALISAPVE KFIRVVVIKEIKGSQYGVQLESSVRDRLAADDKYEEEEEEALEKIVEFF

	QSKYFKKDSIITFHFPATSHTAEIFVFTAEGKESSKIKVENANVVETIKKW YLGGRGVSPSTISSSLANTLSAELTK
RcF3H1	MEVVRVQTLALGGLNELPAKFIRPAHEQPKNSKALEGVSVPMISLAQP HDVVVKEVVKAAA EWGFFLLTDHGIPAFLIQELQKVGNEFFMLPQEEK EAYANDPASGKFDGYGTKMTKNHDEKNPPSYREVNEKYNNEMLRVT DKLLELLSEGLGLDKKVLKSHVGGGEQVELEMKINMYPPCPQQLALG VEAHTDMSALTLLVSNDVPGLQLWKDDNWVAVNCLPNAV FVHIGDQ IEVLSNGKFKSILHRSLVNKEHLRMSWAMFIVPPHEAVIGPLPELVNNQ NPAKYSTKTYAEYRYRKFN SIPQ
RcF3H2	MEAGASTTASSSFTSALTLTQLGVSLVPQRYVLPPSHRSSPSYPNLSTTA PLPILDLSSLQSPSLRPHVINDIHTACKEIGFFQVINHGIPLSILKDALSAA NEFFNLPIEEKMVLGSDNVHAPVRYGTSMNQAVDRVHFWRDFIKHYS HPISKWIHLWPSNPSSYKEKMGNYAKAVQTLQQQVMELVIESLGLNPN YLDEEVENG SQVMAVNCPKCPPELALGMPPHSDYGFITILLQSCPGL QIMDQNNNWVSPDTEGALLVQMGDQMEVLSNGQYKSVVHRVTVS DDKNRLSIASLHSLGLDKKIAPALLVDNEHPKSYREFSFRDFLDYITSN DIIKGIRFIDTLKENP
RcFLS1	MEVVRVQTLALGGLNELPAKFIRPAHEQPKNSKALEGVSVPMISLAQP HDVVVKEVVKAAA EWGFFLLTDHGIPAFLIQELQKVGNEFFMLPQEEK EAYANDPASGKFDGYGTKMTKNHDEKNPPSYREVNEKYNNEMLRVT DKLLELLSEGLGLDKKVLKSHVGGGEQVELEMKINMYPPCPQQLALG VEAHTDMSALTLLVSNDVPGLQLWKDDNWVAVNCLPNAV FVHIGDQ IEVLSNGKFKSILHRSLVNKEHLRMSWAMFIVPPHEAVIGPLPELVNNQ NPAKYSTKTYAEYRYRKFN SIPQ
RcFLS2	MGVERVQDIASSTLKDTIPAEFIRSENEQPGITTVPGTVLECPIDFSDPD EEKLLAQILAASTDWGM YQIVNHDISNEAIAKLQAVGKEFFELPQEEKE VYAKDPNSKSV EGYGTFLQKELEGKKGWVDHLFHRIWPLSAINYRFW PKNPASYREANEDYAKNLHKVVEKLFKLLSLGLGLEAQDLKKAVGGD DLVYLLKINYPPCPRPDALGVVAHTDMSALTILVPNNVQGLQACRD GQWYDVKYIPNALVIHIGDQMEIMSN GKYKAVLHRTTVSKDQTRISW PVFLEPPQDLEIGPHPKLVDDKENPPKYKTKKYREYVYNKLNKIPQ
RcFLS3	MKIYTD FGEKIRKNQSEAKLLFEGDELLNISPEKGDRGGDLEMWLSFLT LLLSNRFLVINHGIPLSILKDALS VANEFFNLPIEEKMLLGSDNVYAPVR YWTSINQVVD SVHFWRDFIKHYSHPISNWIHLWPSNPSSYKEKMGNYA KAVQALHQQIVELVIESLGLNPNYIHEEVENG SQVMAANFFPKCPEPKL ALGMPPHSDHGFITILLQSCPGLQIMDQKNWVSPDIEGALLVQMGD QMEVLSNGHYKSVVHRVTVSNECNRLSIASVHNLGLDKKIEPAPLLVD NEHPKSFKEFSFRDFLDYITSNDNSKGRFIDTLKENPRTDT
RcF3'H1	MEDPLWYSLALIIFILVVIKLFITNTSHKYKNLPPSPPCVPIIHLHLRQP IHRTLESLSANFGKIQLLRWGSRRVLLVSSPSIAEECFTKHDI AFSNRPLL LAGKHFHYNYTTVVVAPYGDLWRNLRRIMTLEIFSSSRVAISSIRREQ VRLLLDQIIKSCNSGTPKVELKSKFMDLAFNVMTMMILGKRYYGEDV GDDEEASKFREAVRDAVELNASTNLGDFLPFFQWIDVFGTEKKMVR MAKMDSFLQAMVSDRRQLLSSNCDQNNTGEVSKLLVDNLLFLQKQEP ELYTDEIIKGIIVVLLVAGTETVSTTMEWAMSLLLNHPDKLDKVKA EIE NKVGQERLLDEQDLPNLNYLQNVINETLRLYPIPLL GAREASEDCVVS

	GFDVPCGTMMLVNAWAIHRNSELWDEPTTFQPERFEGWSGEGPGGYR LIPFGGGRRCPCGAGLANRLIGLVLSLIQSFEWERISEDKVDMSSEGIGL TMPKIKPLEVMCKPRPLMQPSMSK
RcF3'H2	MFLIVVITVLLAVILFRLLFSGKSRRHSLPLPPGPKPWPVVGNLPHLGPF PHHSLADLAKKHGPLMHLRLGYVDVVVAASASVAAQFLKTHDANFSS RPPNSGAKHLAYNYQDLVFAPYGPRWRMFRKISSVHLFSGKALDDLK HVRQEEVAVLAHALANAGSKQVVNLAQQNLCTVNALGRVMVGRR VFGDGNGGDDRKADEFKSMVEMMVLAGVFNIGDFIPSVEWLDLQG VASKMKKLHKRFDDFLT AIVEDHKKKMSSGRAEQQVDMLTTLSSLKE DADGEGAKLTDTEIKALLNMFTAGTDTSSSTVEWALAEIRHPQMLE QVQKELDQFVGRDRLVSESDLPNLAYLQAVIKETFRLHPSTPLSLPRMA AESCEINGYHIPKGSTLLVNVWAI SRDPAEWADPLEFRPERFLPGGEKP NVDIRGNDFEVIPFGAGRRICAGMSLGLRMVHLMATL VHAFDWGLP DGLTPPKLNMDEAYGLTLQRAAPLMVHPTRLASHAYKASSS
RcF3'H3	MLLPHFSSNDCVVSGFNIPQDTLLLVNAWAIHRDPKLWNEPESFKPERF EGGGKDLAAHKLIPFGLGRRACPGVSLAQRVVGLTLASLIQSFEWERV NEKEVDMTEGTGLTMPKLVPLEAMCKPRSFLNKILH
RcDFR1	MSSVDDLGPRLGPVNWYSSRDLKFRGTTHGEALGDHVMTRKLSLKQT CSTSVLGYLLLEHGYTVRVTLRDPANMNKVKHLLGLPKAATHRTLWK AELAVEGSFDEAIKGCTGVFHVTPMDFESKDPENEVIKPAINGVLDIM KACLKAKTVRRLVFTSSAGTVNVEEHQKPAYDESNWSDAKFCRKVK MTGWEMKKKYPEYNVPTKFKGIEEKLTKVHFSSKKLLETGFEFKYSLE DMFEGAVDACKAKGLLPPPTTEKHDADDMMQRRPCDNLASIARGE GP GDWGRYLAKNSLIVRTRLCDGRCWFCWIMARHETPRAWLHCPGHRA RPWSVRQFYLLINSTAYYVSNMKKVKPLLDLPKAKTHLTLWKSOLDV EGSFDEAIKGCAGVFHVATPMDFESKDPENEVIKPTINGMLDIMKACL KAKTVSRLVFTSSAGTVTAEEHRKSVYDESNWSDIDFCRKVKMTGWM YFVSKTLAEQA AWKFAKENKIDFITIPTLVIGPFVSPSPMPPSLITGLSPIT GNEGHSIIKQGQFVHLDDLCQA HIFLYEHPKAEGRYICSSHDATIH DV AKLLREKYPEYNVPTKFKGIEDNLENIHFSSKKLIEAGFEFKYSLED MF VGAVDACKAKGLLPPNSAAHETN
RcDFR2	MGSESESVCVTGAAGFIGSWLVMRLLERNYTVRATNEVIKPTINGVLDI MKACLKAKTVRRLVFTSSAGTVNVEEHQKLAYDESNWSDVEFCRKV KMTGWMYFVSKTLAEQA AWKFAQENNIDFITIPTLVVGPFLMPAMPP SLITGLSPITGNEGHSIIKQGQFIHLDDLCQSHIYLYEHPKAEGRYICSS YDATIHDI AKLLREKYPEYNVPTKFKGIEENLTKVHFSSKKLLETGF EF KYSLED MFVGAVDSCKAKGLLPPPTTEKHDADD SNVVHVKLTA
RcANS	MVTAASIGSRVESLASSGISKIPKEYVRPKEELINIGDIFEDEKSTVGPQV PTIDLKEIDSEDIKVREKCREELKKA AVDWGVMHLVNHGISDELMDRV RNAGQAFFDLPIEQKEKYANDQASGKIQGYGSKLANNASGQLEWEDY FFHCVPEDKLDLSIWPQTPTDYIVATSEYAKELRGLATKIMTILSLGLG LEEGRLEKEVGGLEELLQMKINYYPKCPQPELALGVEAHTDISALTFI LHNMV PGLQLFYEGKWVTAKCVPNSIVMHIGDTLEILSNGKYKSILHR GLVNREKVRISWAVFCEPPKEKIILKPLLETVSEEEPAIFPPRTFSEHIQH KLFRKSQENLLSTKEAALISTDEAALMSTEEAAIISTNGADLISTKEAALI STKDAA

RcUFGT1	MSRSHSIPLIDTAKLFSSHGAKCTIVTTPLNAPLFSKATQISGIELLLIKFP STEAGLPPDCESADLITTPDMVEKFKASILLESQVEQILDEHRPHCLVA DAFFPWATDVAAKIGIPRLYFHGFGFFPLCASLSVMMNQPHPKLLSSDS ESFIIPNLPDEIKMTRSRLPVFPILNGDQSEFIKMKVSKASQSEEEKSYGVIV NSFYELESAYADHYRKVFGRRAWHIGPVSLCNKVAEDKAKRGSMERS TAEKHECLKWLDSKKPRSVVYVCFGSMVSFADCQLLEIAIGLEASGQE FIWVVKKVRKEIEEWLPEGFEKRVGKGLIITDWAPQVLILEHEAIGAF VTHCGWNSTLEGVSAGVPMITWPLFGEQFYNEKLVTEILRIGVPVGSE QWVLFVELSKKKEASVKREAIEKAVTRIMVGDEAEIERSRAIELGKMA RRAVVEGGSSFLDLTALVKELNHLVDA
RcUFGT2	METKTDRQLHIFFLPYMAQGHTLPLIGIAKLFASRGVKSTIITTPVNEPIF TKAIQTSQSFSFEIELVVIKFPTAEVGLPEGIESTKLQRTKEMREKFFKAI TLLEQQVEQILEQHHPHCLVADSLFWATDVAAKFGIPRLIFHGPFFP MCAAISVMRYQPHAKVSSDSEPFVIPGLPDEIKMTRNQLPAFLTNGKT ELIKLVKASREAEERSYGIIVNSFYELEPPYADHYRKVLGKKSWHIGPV SLCNKAEKDKSEGGREGSIIEVNECLNWLNSKKSNSVVYICFGLTNFS GCQLVEIALGLEASQQQFIWVVKKEKNDKEEWLPEGFEHRIEGKGLIIR GWAPQLLILQHEAVGAFVTHCGWNSILEGVSAGVPMITWPVSADQFS NEKLVQTILGIGVAVGAQKSEDGSMKSEARVKREAIEKAVTELMVGD EQEEMRSKVSALRGMARSAVEKDGSSFSDLTALIEELRSLRSSFS
RcUFGT3	METKTHQQLNIFFLPYMAQGHTLPLIDIAKLFASHGVKSTIITTPLNAPL FFKPIQTSKSLGFEIELLIKFPCIEVGLPEGIESANLTTSREMKEKHFKAT TLLEPKVEQILDQYRPHCLVADSLFWATDVAAKFGIPRLIFHGTGFFP LCASMSVMLYQPQLKVSSDSESFVIPHLPDEIQTRNQVPAYLNLDGKT ELIKLVASREAEERSYGIIVNSFYELEPDYADHYRNVFGRKAWHIGPV SLCNKAEKDKSERGRENSVDEVHDCFNWLNSKEPNSVVYICFGLTNF SDCQLVDIALALEATQQQFIWVVKKEKNDKQEWLPEEFEQRMEGKGL IIRGWAPQLLILEHEAVGAFMTHCGWNSILEGVAAGVPMITWPVSGEQ FYNEKLVTELLGIGVAVGAQKWTTFEEESQKTEASVKMEAIEKAVNEI MVGDEAEEMRNRVKALGEIARRAVEECGSSFSDLTSLIEELRSLRS
RcUFGT4	METKSDRQLHIFFLPYMAQGHTLPLIDIAKLFASRGVKSTIITTPVNAPIF TKAIQQSQSFGFEIELVVIKLPSAQVGLPEGIESTTKLQKTKEMGKEFIK AITLLEQQVEQILDQHHPHCLVADSLFWATDVAAKFGIPRLIFHGPFGF FPLCAIMSVMYQPHMKVSSDSESFVIPNLPHEIKMTKNELPSFLTQNG ETDFTKLLKACEEVDERSYGIINSFYELEPDYADHYRKVFSRKAWHIG PVSLCNKAEKEKLERGIREGLVDEVHECLNWLNSKKPSSVVYICFGSM NSFGDCELLEIALGLEASRQQFIWVVKREKNVKGWLPGEFEQRVEGK GLIIRGWAPQLLILQHEAVGAFLTHCGWNSILEGVSAGVPMITWPLFED QFSNEKLVQTILGIGVAVGAQKSEDGRTKSEASVKREAIEKAVTKIMV GVEQEEMRKKVFALGEIARSTVEEGSSFTDLTALIEELSTFKSTSVME EENNVQLIYKTYKKEHWGFIYLADLCIMLEFTQLRGDDEHVD
RcUFGT5	METKSHQKLHIFFLPFMGRGHTLPLIDIAKLFASRGVKSTMITTPANAPL FSKAIQTSKSSGLEIELLLIKFPSTEVGLPEGIESTNWAETKEMREKFIK ALTLEPQVEQLLDQHRPHCLVASTLFWTTDVAAKFGIPRLMFHGPFG YFPLCAAMSVRQYQPHMKVSSDSESFVIPNLPHEIKTTRNELPSFVTQN GETELTKLLKACRETEERSYGTIINSFYELEPDYADHYRKVFGRKSWHI GPVSLCNMAEKEKLERGREGSVVDQVHDCLNWLNSKKPNSVVYICFG SINSFSDCELLEIALGLEASRQQFIWVVKREKNDNDEWLPEGFEQRMEG

	RGLIIRGWAPQLLILQHEATGAFLTHCGWNSILEGVSAGVPMITWPVFA DQFNNEKLVTQILGIGVAVGAQKSEDSMKSEARVKREAIEKAVTEIM VGDEQEEMRRKVFALAEMARRAVEEGSSFTNLTAALMEELRSFVS
RcUFGT6	MEKPAELVFIPSPGVGHLVSTVEIAKLLVSRDDQLLITVLIMKFPSDTLG TDAYIESFTHTSNSKRINFIPQVNVNIDKGNISGFMIDFIESQQPNVRD AVTKLAKSETRLAGFVIDMFCTSMIDVANEFVPTVYVFFTSGAATLGL MFHLQALRDHDGQHMDWTEFKDSDAELLIPSFVNPLPAAKVLPGRLL GKETANSFLDIKRFRGTGKIVVNTFTELESHALHALLSDAEIPPVYPVG PLLNLNSDNNSLDEAKQKSDILKWLDQPPLSVVFLCFGSMGSGFREDQ VKEIAQALEHVGHRFLWSLRRPPPDGKIGFSPDYDDHRGVLPFGLERT ERTGKVGWAPQNAILAHPVSGGFVSHCGWNSTLESWHGVPVATWPL LYAEQQLNAFELVKELGLAVEIDMSYRNSNPVPVSAQIIEGIREVMEL DSDIRRRVREMSVKSKKALMDGGSSYSSLGHFINQIYN
RcUFGT7	MEKPAELVFIPSPGIGHFVSTVEIAKLLVSRDDQLLITVLIMKFPSDTKV TDAYIESFTHTSNLKRIFINLPQVNMENTQGNISGFMIDFIESQQPHV KNAVTKLAESRTRLA AFVIDMFVAMVDVANEFVPTVYVFFTSGAAT LGVMFHLQALRDHDREYKDCIEFKDSDAKLLIPSFVNPLPAAKVLPGG LFVKETANSLLNLRFRGTGKILVNTFTELESHALRALLSDAEIPPVYP PPLSVVFLCFGSMGSGFEDQVKEIAQALEHVGHRFLWSLRRPPPDGKIG FPSDYDDDKVLPFGLDRTEGTGKVGWAPQNAILAHPVSGGFVSHC GWNSTLESWHGVPVATWPLYAEQQLNAFELVKELGLAVEIDMSFRN SSSSPIPVSAQKIESGIREVMELSDIRNKVREMRVKSKKALMDGGSSY SSLGHFINQIYN
RcUFGT8	MKKS AELVFIPSPGIGHLVSTVEIAKLLSRTDQLLITVLIKFPFSSDGT AYIESVAESSISQRIKFIDLPQKNMDTQDNGTTSFFKFIDAQQTNVKDVV TKLIESESETRIAGFVIDMFCTSMIDVANEFVPTVYVFFTSGAGALGLMF HMQQLRDDHNKHCIEFKDSTVELAIPSYANPLPAARVLPNVLFKDVG DGFLNFAKRFRDAKGILVNTFTELESYALHSLSDGKIPPVYPVGPILNI KNDDSDNQENSKQKSNILTWLDEQPPSSVVFLCFGSMGSGFEDQVKEI ARALEHGGFRFLWSLRQPAPEGKFGFPSDYADHTRVLPEGLDRTARI GKVGWAPQVTILAHPSVGGFVSHCGWNSTLESWFGVPVATWPLYA EQQLNAFELVTELNLAVEIDMSYRKDG PVLVSAQKIERGIKEVMELDS DIRKKVIKMSSENSKKALMEGGSSYSSLGHFIDQI
RcUFGT9	MKKATELIFIPIPGIGHIVSTVEIAKLLSRTDQLLITVLIKFPFSSDGT AYIESLADPCSTLKTQRIKFVSLPQEQFQGN DATGFFTFIDSHKSHVKDA VTKITESGPETRIAGLVIDMFCTGMIDVADEVGLPTVYVFFTSGAANLGL MFHLQALRDEQNKDCTEFKDSAEELVPSFVNPLPAARVLPVLFKDV SMAGNLFLNFAKRFRGTGKILVNTFLELELYALQSLSDGKVPVYPVPIG PILNVKSDDDKVGSEKSKQKSDILKWLDQPPLSVVFLCFGSLGSGFED QVKQIAYALEQGGFRFLWSLRQPPQEEAVFPSDYADYSRILPEGLHRT AVIGKVGWAPQVDILAHPAVGGFVSHCGWNSTLESIWYGVPIATWPL YAEQQVNAFELVKELKLAVEIDIGYRKDSGVVSSQDIEKGITEVMEQ DSELRKRVKEMSQMSKKALADDGSSYSSLGRFIDQI
RcUFGT10	MKKATELVFIPAPGIGHIVSAVEMAKLLVARDDQLFITVLIMKLPLDSK PKGTDDTYSRSEIKFINLPEINIDTHGISPAYFFKLFVESHKPHIKDAVS KLSQSQSNPLLAGFVIDMFCTRFGLLFLHQLTSLDEQNKDFTDFKDSDD ELVLP SFVNPLPARALPSVFLDKEYTTIFVNIGRRFRGTGKILVNTFMEL

	EAHALHSLSDGKTPPVYPVGPILNITGNENLEDYSDLAKQKTDSTLKW LDDQPPLSVVFLCFGSMGTFEEGQVKEIACALEQSGLRFLWSLREPPAK GKIAYPSEDYAGYRGVLPFGFLDRTSGIGKVIGWAPQVAVLAHPAIGGF VSHCGWNSMLES LWYGVPVGTLP MYAEQHLNAFEMARELG LAVEVS MDYRKNSDFVNAEEIQRGIRQVMDHSDTRKRVKKMSEMSKKALMD GGSSYSSLGRFIEQIFLTS
RcUFGT11	MIFLKVHRQMKKPAELVFIYLRRCRCSFLNSRRSRSPSSSYLETTTSSSP SHRKESILIIKDHQHVFLKVIENEETRRARVHPLRRCRPPHIDGRDRQAP RISRPYVESIEAASQKRIKFINLPEPNLDFTNMTRNEFRIAFMETHKPYV RDAVTELAESTESAPRLAGFVIDMFCTTMIDVANEFVPTYVFFTSNAG FLGLMFHLQTIHDKHDMDVTELKSLETELVLPSFVNVPVPHKALPSTLM DKEGATTFLDYARRFRET KGILVNTFSELESHALRSLSSYGEIPPVYPVG PVLKLTEDDAHEGSDQATQKTDIIEWLDDQLPSSVVFLCFGSMGSFG EDQVKEIACALEQSGHRFLWSLRRPPPKGKITRPSDYTD PAGVLPDGF ERTARIGKVIGWAPQVAVLAHPAVGGFVSHCGWNSLTESLWFGVPIAT WPMYAEQQMNAFEMVKELGLAVKISVEYDTAEENKMLLSAEEIERGI RELMEPGSDIRKRVKQMSEMSKTTLLDGGSSYSSLGRFIDQIFL
RcUFGT12	MKKATELVFIPAPGIGHIVSAVEMAKLLVARDDQLFITVLIMKLPLDSK PKGTDDTYSRSEIKFINLPGINIDTQGISPFNFFKLFVESHKPHIKDAVS KLSQSQSQSNPRLAGFVIDMFCTSMIDVANELGVPTYVFFASNAGFLGL VFHLQTLSDHKNKDFD FKDSDEL VLPGFVNPLPARALPSVFLDKDN TATFVNIGRRFRET KGILVNTFMELEAHALHSLSDGKTPPVYPVGPILNI TTNENHEDYSDLAKQKADSTLKW LDDQPPLSVVFLCFGSMGTFEDEDQ VKEIACALEQSGLRFLWSLREPPAEGKIAYPSEDYTDYRGVLPFGFLDRT SGIGKVIGWAPQVAVLAHPAIGGFVSHCGWNSMLES LWYGVPVGTLP MYAEQHLNAFEMARELG LAVEVSMDYRKNSDFVNAEEIQRGIRQVM DHSDTRKRVKEMSEL SKKALMDGGSSYSSLGRFIEQIFLTS

Table S6 Correlation between RcBBX26 and anthocyanin biosynthetic genes.

	Correlation coefficient
<i>RcPAL1</i>	-0.4742
<i>RcPAL2</i>	-0.9505
<i>RcC4H</i>	-0.4139
<i>Rc4CL1</i>	-0.4176
<i>Rc4CL2</i>	-0.5314
<i>Rc4CL3</i>	-0.6679
<i>Rc4CL4</i>	0.5479
<i>Rc4CL5</i>	0.6036
<i>Rc4CL6</i>	0.9157
<i>Rc4CL7</i>	0.4187
<i>Rc4CL8</i>	0.5126
<i>Rc4CL9</i>	-0.3761
<i>Rc4CL10</i>	-0.3591
<i>Rc4CL12</i>	0.8950
<i>RcCHS1</i>	-0.5107
<i>RcCHS2</i>	-0.5095
<i>RcCHI1</i>	0.6627
<i>RcCHI2</i>	-0.4134
<i>RcCHI3</i>	-0.5394
<i>RcFLS1</i>	0.7244
<i>RcFLS2</i>	-0.4750
<i>RcFLS3</i>	0.1724
<i>RcFLS4</i>	0.1497
<i>RcF3H1</i>	0.9083
<i>RcF3H2</i>	0.1497
<i>RcF3 H1</i>	-0.0484
<i>RcF3 H2</i>	-0.5130
<i>RcF3 H3</i>	0.8366
<i>RcDFR1</i>	-0.5634
<i>RcDFR2</i>	-0.5070
<i>RcANS</i>	0.8449
<i>RcUFGT1</i>	-0.2783
<i>RcUFGT2</i>	-0.3360
<i>RcUFGT3</i>	-0.3190
<i>RcUFGT4</i>	-0.4387
<i>RcUFGT5</i>	-0.4761
<i>RcUFGT6</i>	-0.4060
<i>RcUFGT7</i>	-0.4188
<i>RcUFGT8</i>	0.6242
<i>RcUFGT9</i>	0.7021
<i>RcUFGT10</i>	-0.3505
<i>RcUFGT11</i>	0.8840
<i>RcUFGT12</i>	-0.4615

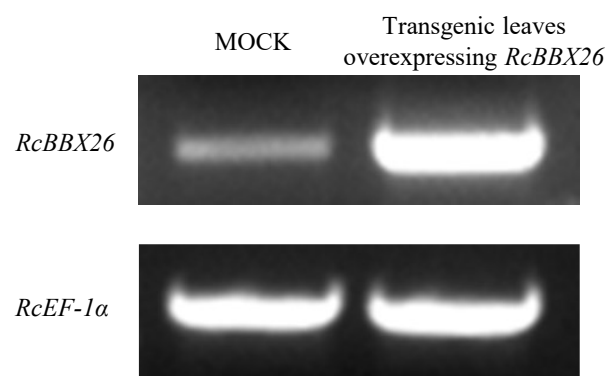


Figure S1

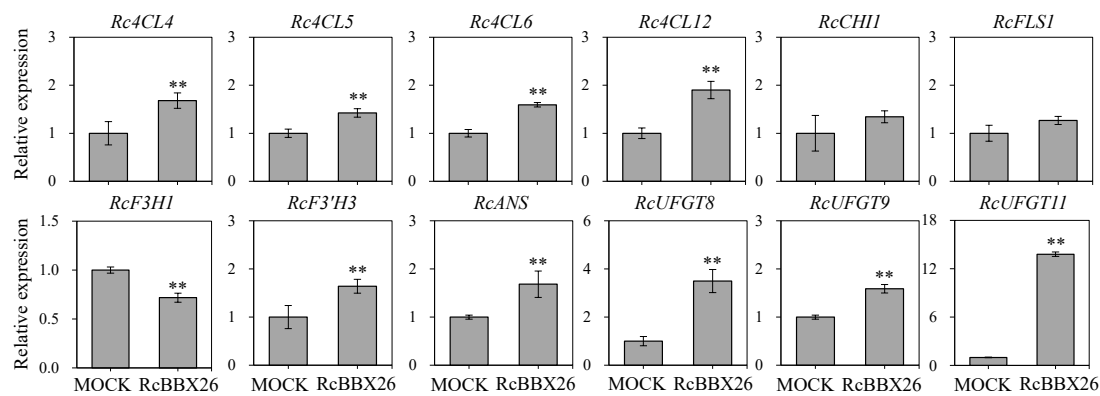


Figure S2