

Table S1. Coding sequence (CDS) of *CoSWEET10*

| Gene name | CDS |
|------------------|--|
| <i>CoSWEET10</i> | ATGGGTGGTTCTAGTCACAATTGGCTTCGATTGGCCTTCTAGCAACATCATCTCATTCTTGCTTCCTTCACCCCTGCCAACATTACCAA ATATTCAAGAAAAAAATCAACTGAAGGGTCCAATCGGTTCCATTACATAGTTGCCTGTTAGTGCTATGTTGATGTATTACGCATTCTCAAGAAGAT TGACTCTACACTTATCATCACTATAAACTCATTTGGATGCTGGTCGAAACTATTATATTGTGTTATCTCTTACGCTCCAAGAAGATTAAGTTAAA ACCATGAAACTACTTGGATTCATGCTTGGCGGGTTGGCGCGATCCTTATCTTAACACTCAATTCTTATCAAAAAAGCTCAACCCGCTTCACATTGTTGG TTGGATTGCTTATTGTTCTCTGTGAGCGTTTCGCCGCTCCTCTGCATATTGAAACAAGTGATACGAACAAAGAGCGTAGAGTTCATGCCATTTCCT TATCACTTCGCTCACGCTTAACCGGGTATGTGGTTCTCTATGGCCTTCTAATAAAAGACTTCAACATTGCTATTCCGAATGTCTGGGTTATTGTTG GAATTATTCAAATGGGCTTACCGATATAACAAGAACCCAAAGAAAGTTGCGAAAGATCAAAAGTTCTCTGATCAAATACCAAAACAAAGTGA TAGCCTTGGAGGAAGAGAAGCTATCTGAATTAGTCGAACAAGTGATTGATGTTGAAAGATCAAAGTTCTCTGATCAAATACCAAAACAAAGTCA TAGCCTTGGAGGAAGAGAAGCTATCTGAATTAGTCGAACAAGTGATTGATGTTGAAAGCTAGCTCAATCGCATGTCAAGAAATCGTCCAGTCATGC CTCATCTGAATGGACACAACATAGCTAGAGAGCTCAATACAATTAAACCAAACCTGAAGTCACCGTGCCGGTCAA |

Table S2. The amino acid sequences used for constructing phylogenetic tree.

| Protein name | Amino acid sequence |
|--------------|---|
| CoSWEET10 | MGGFSSHNLAFAGLLGNIISFFVFLSPLPTFYQIFKKKSTEGFQSVPYIVALFSAMLLMYYAFLKKIDSTLIITINSFGCLVETIYICVYLGYAPKKIKFKTMKLLG FMLGGFGAILILTQFLIKKSSTRFHIVGWICLLFSVSFAAPLCILKQVIRTKSVEFMPFSLSLTLNAVMWFFYGLLIKDFNIAIPNVLGFIQMVLYAIYKN PKKVVAKDQKFSSDQIPNKVIALEEKLSELVEQVIDVVKDQKFSSDQIPNKVIALEEKLSELVEQVIDVVKLSSIACQEIVPVMPHLNHGNIARELNTIKPNL EVTVPV |
| AtSWEET1 | MNIAHTIFGVFGNATALFLFLAPSITFKRIIKNKSTEQFSGIPYPMTLLNCLLSAWYGLPFVSKDNTLVTINGTGAVIDTVYVLIFLYAPKKEKIKIGIFSCVLA VFATVALVSLFALQGNGRKLFGLAATVFSIIMYASPLSIMRLVVTKSVEFMPFFSLFVFLCGTSWFVYGLIGRDPFVAIPNGFCALGTLQLILYFIYCGNKG EKSADAQKDEKSVEMKDDEKKQNVVNGKQDLQV |
| AtSWEET2 | MDVFAFNASLSMCKDVAGIAGNIFAGFLFVSPMPTFRRIMRNKSTEQFSGLPYIYALLNCICLWYGTPFISHSNAMLMTVNSVGATFQLCYIILFIMHTDKKN KMKMLGLLFFVVFAVVGIVAGSLQIPDQLTRWYFVGFLSCGSLVSMFASPLFVINLVRTKSVEFMPFYLSLSTFLMSASFLLYGLFNSDAFVYTPNGIGTILGIV QLALYCYYHRNSIEETKEPLIVSYV |
| AtSWEET3 | MGDKLRLSIGILGNGASLLLTAPIOVTSRVFKKKSTEEFSCFPYVMTLNCLITYTWYGLPIVSHLWENLPLVTINGVGILLESIFIFIYFYYASPKEKIKVGVTFV PVIVGFLTTAISALVFFDDHRHRKSFVGSQLVASIMYGSPLVMKKVIETRSVEYMPFYLSFFSFLASSLWLAYGLLSHDLFLASPNMVATPLGILQLILYFKY KNKKDLAPTTMVITKRNDHDDKNAKATLEFVVDVDRNSDTNEKNSNNASSI |
| AtSWEET4 | MVNATVARNIAGICGNVISLFLSPIPTFITIYKKKKVEEYKADPYLATVLNCALWVFYGLPMVQPDSSLVTINGTGLAIELVYLAIFFFSPTSRKVVKVGLWL IGEMVFVGIVATCTLLLFTHNQRSSFVGIFCVIFVSLMYIAPLTIMSKVIKTKSVKYMPFSLSANFLNGVVVVIYALIKFDLFLIGNGLGTSGAVQLILYAC YYKTPKDDDEEDEENLSKVNSQLQLSGNQAKRVSA |
| AtSWEET5 | MTDPHTARTIVGIVGNVISFGLFCAPIPTMVKIWKMKSVSEFKPDPYVATVLNCMMWTFYGLPFVQPDSSLVTINGTGLFMELVYVTIFFVFATSPVRRKITIA MVIEVIFMAVVIFCTMYFLHTTKQRSMLIGILCIVFNVIMYAAPLTVMKLVIKTKSVKYMPFSLANFMNGVVVVIYACLKFDPYILIPNGLGSLGIIQLIYIT YYKTTNWNDDEDKEKRYSNAGIELGQA |
| AtSWEET6 | MVHEQLNLIRKIVGILGNFISLCLFLSPTPTFIHVKKKSVEKYSPLPYLATLLNCLVRALYGLPMVHPDSTLLVTISGIGITIEIVFLTIFFVFCGRQQHRLVISAVL TVQVFVATLAVLVLTLHETTDQRTISVGIVSCVFNAMMYASPLSVMKMKVIKTSLEFMPFLSVVGFLNAGVWTIYGFVPDFPLAIPNGIGCVGLVQLILY GTYYKSTKGIMEERKNRLGYVGEVGLSNAIAQTEPENIPYLNKRVSGV |
| AtSWEET7 | MVFAHLNLLRKIVGIIGNFIALCLFLSPTPTFVRIVKKKSVEEYSPIPYLATLNLINCLVWVLYGLPTVHPDSTLVTINGTGILIEIVFLTIFFVYCRQKQRLIISAVIA AETAFAILAVLVLTLQHTTEKRTMSVGIVCCVFNMMYASPLSVMKMKVIKTSVEFMPFWLSVAGFLNAGVWTIYALMPFDPFMAIPNGIGCLFGLAQLILY GAYYKSTKrimaerenQPGYVGLSSAIARTGSEKTANTNQEPNNV |
| AtSWEET8 | MVDAKQVRIFIIGVIGNVISFGLFAAPAKTFWRIFKKKSVEEFSYVPYVATVMNCMLWVFYGLPVVHKDSILVTINGVGLVIELFVGVYLMYCGHKKNHRR NILGFLALEVILVVAIILITLFLALKGDFVKQTFVGIVCDVNIAMYGAPSLAIKVVKTKSVEYMPFLLSLVCFVNAGIWTTYSIFKIDYYVLASNGIGTFLALSQ LIVYFMYYKSTPKETVKPSEVEISATERV |
| AtSWEET9 | MFLKVHEIAFLGLLGNIISFGVFLSPVPTFYGIYKKKSSKGQSIPYICALASATLLYYGIMKTHAYLIISINTFCFCIEISYLFLYILYAPREAKISTLKLIVICNI GGLGLLILLVNLVPKQHRVSTGVWCAAYSLAVFASPLSVMRKVIKTKSVEYMPFLLSLTLNAVMWFFYGLLIKDKFIAMPNILGFLFGVAQMILYMMY |

| | |
|-----------|---|
| | QGSTKTDLPTENQLANKTDVNEVPIVAVELPDVGSDNVEGSVRPMK |
| AtSWEET10 | MAISQAVLATVFGILGNIISFFVCLAPIPTFVRIYKRKSSEGYQSIPYVISLFSAMLWMYYAMIKKDAMMLITINSFAVVQIVYISLFFFYAPKKEKTLTVKFVLF VDVLGFGAIFVLTYFIIHANKRVQLGYICMVFAFSVFAPLGIIRKVIKTSAEFMPGLSFFLTLSAVMWFFYGLLLKDMNIALPNVLGFIFGVQLQMILFLIYK KPGTKVLEPPGIKLQDISEHVVDVVRSTMVCNSQMRTLVPQDSADMEATIDIDEKIKGDIKEKNKDEKEVFLISKN |
| AtSWEET11 | MSLFNTENTWAFVFGLLGNLISFAVFLSPVPTFYRIWKKKTTEGFQSIPYVVALFSATLWLYYATQKKDVFLVTINAFCGFIETIYISMFLAYAPKPARMLTVK MLLLMMNFGGFCAIILLCQFLVKGATRAKIIGGICVGFSVCVFAAPLSIIRTVIKTRSVEYMPFSLSLTTISAVIWLLYGLALKDIYVAFPNVLGALQMILYV VYKYCKTSPHLGEKEVEAAKLPEVSLDMLKLGTVSSPEPISVVRQANKCTCGNDRRAEIEDGQTPKHGKQSSAAAT |
| AtSWEET12 | MALFDTHNTWAFVFGLLGNLISFAVFLSPVPTFYRICKKKTTEGFQSIPYVVALFSAMLWLYYATQKKDVFLVTINSFGCFIETIYISIFVAFASKKARMLTVK LLLMMNFGGFCLILLLCQFLAKGTRAKIIGGICVGFSVCVFAAPLSIIRTVIKTSVEYMPFSLSLTTISAVIWLLYGLALKDIYVAFPNVIGFVLGALQMILYV YKYCKTPSDLVEKELEAAKLPEVSI DMVKLGLTLSPEPVAITVVRSVNTNCNDRNAEIENGQGVRNSAATT |
| AtSWEET13 | MALTNNLWAFVFGILGNIISFVVFLAPVPTFVRIKCKKSTEGFQSIPYVSALFSAMLWIYYAMQKDGTAFLLITINAFCVIETIYIVLFVSYANKKTRISTLKVL GLLNFLGFAAIILVCELLTKGS TREKV LGGICVGFSVFAAPLSIMRVVVRTRSV E FMPFSLSLFTISAVTWLFYGLAIKDFYVALPNVLGAFLGAVQMILYII FKYYKTPVAQKTDKSKDVS DHSIDI A KLT VVIPGA VLD SAVHQPPA LHN VPETK IQL TEVKS QNMDPKDQINKDQVQKQSQV |
| AtSWEET14 | MVLTHNVLA VTFGVLGN IISFIVFLAPVPTFVRIKCKK SIEGFESLPYVSALFSAMLWIYYALQKDGA GFLLITINA VGC FIE TIYI IILFITY YANKKARISTLKVLG LNFLGFAAIILVCELLTKGS REKV LGGICVGFSVFAAPLSIMRVVIRTKSVEFMPFSLSLFTISAITWLFYGLAIKDFYVALPNILGAFLGAVQMILYVIFKY YKTPLV VDETEKPKTVSDHSINMVKLSSTPASGDLTVQPQTNP DVSHPIKTHGGDLEDQMDKKMPN |
| AtSWEET15 | MGVMINHHFLAFIFGILGNVISFLVFLAPVPTFYRIYKRKSTESFQSIPYQVSLFSCMLWLYYALIKKDAFLLITINSFGCVVETLYIAMFFAYATREKRISAMKLF IAMNVAFFSLIMVTHFVVKTPPLQSVLGWICVAISVSVFAAPLMIVARVIKTSVEYMPFTLSFFLTISAVMWFAYGLFLNDICIAIPNVVGFVLGLQMVLVY LVYRNSNEKPEKINSSEQLKSIVMSPLGVSEVHPVVTESVDPLSEAVHHEDLSKVTKVEEPSIENGKCYVEATRPETV |
| AtSWEET16 | MADLSFYVG VIGNVISLVFLSPVETFWRIVQR RSTE EYECFPYICTL MSSSLWTYYGIVTPGEYLVSTVNGFGALAESIYVLIFLFFVPKSRLKTVVVVLALN VCFPVIAIAGTRTLFGDANSRSSSMGFICATLNIIMYGSPLSAIKTVVTTRSVQFMPFWLSFFLFLNGAIWGVYALLHDMFLV PNGMGFFLGIMQLIYAYYR NAEPIVEDEEGLIPNQPLLA |
| AtSWEET17 | MAEASFYIGVGNVISLVFLSPVETFWKIVKRRSTE EYKSLPYICTLLGSSLWTYYGIVTPGEYLVSTVNGFGALVETIYVSLFLFYAPRHLKLKTVDVEAML NVFFPIAAIVATRSAFEDEKMRSQSIGFISAGLNIIMYGSPLSAMKTVVTTKSVKYMPFWLSFFLFLNGAIWAVYALLQHDVFLVPNGVGFGTMQLIYGIY RNAKPVG GLSNGLSEIAQDEEEGLTSRVEPLLS |

Table S3. The primers used in this study.

| Gene name | Forward primer (5'-3') | Reverse primer (5'-3') | Purpose |
|------------------|--------------------------------------|---------------------------------------|--|
| <i>CoSWEET10</i> | ATGGGTGGGTTCTCTAGTCACAAT | TTAGACCGGCACGGTGACT | Gene clone |
| | GTTGTTGCGAAAGATCAAAAGTT | TTCTTGACATGCGATTGAGCTAA | qRT-PCR |
| <i>GADPH</i> | GGTGCCAAGAAGGTGGTAATA | GTTGTGCAGCTTGCATTAGAG | qRT-PCR |
| <i>CoSWEET10</i> | GGGGCCCGGGTCGACATGGTG GGTTCTCTAG | CCATGGTACCGGATCCGACCGGC ACGGTGAC | Subcellular localization assays |
| | CGAGCTCAACTTCGAAATGGTG GGTTCTCTAG | TTCCCTCGAGGTGCGACTTAGACC GGCACGGTG | Yeast complementation assays |
| | CGCCACTAGTGGATCCATGGTGG GTTCTCTAG | TCCCAGGAGCGGTACCGACCGG CACGGTGAC | BiFC assays (cYFP) |
| | CGCCACTAGTGGATCCATGGTGG GTTCTCTAG | TCCCAGGAGCGGTACCGACCGG CACGGTGAC | BiFC assays (nYFP) |
| | AATACTAGTGGATCCGGTAC | GATGAACCTTCAGGGTCAGCT | <i>Arabidopsis</i> transgenic restoration lines generation |

Table S4. Analysis of cis-acting elements of *CoSWEET10* promoter

| <i>Cis</i> -acting element | Sequence | function | Number of copies |
|----------------------------|--------------|---|------------------|
| ARE | AAACCA | cis-acting regulatory element essential for the anaerobic induction | 3 |
| AE-box | AGAAACTT | part of a module for light response | 2 |
| TGA-element | AACGAC | auxin-responsive element | 1 |
| CAAT-box | CAAT/CAAAT | common cis-acting element in promoter and enhancer regions | 25 |
| TATA-box | TATA | core promoter element around -30 of transcription start | 142 |
| GC-motif | CCCCCG | enhancer-like element involved in anoxic specific inducibility | 1 |
| G-box | CACGAC | cis-acting regulatory element involved in light responsiveness | 1 |
| Box 4 | ATTAAT | part of a conserved DNA module involved in light responsiveness | 1 |
| CGTCA-motif | CGTCA | cis-acting regulatory element involved in the MeJA-responsiveness | 2 |
| TGACG-motif | TGACG | cis-acting regulatory element involved in the MeJA-responsiveness | 2 |
| MBS | CAACTG | MYB binding site involved in drought-inducibility | 1 |
| MYC | CATGTG/CATTG | MYC binding site | 4 |
| I-box | GATAA | part of a light responsive element | 1 |

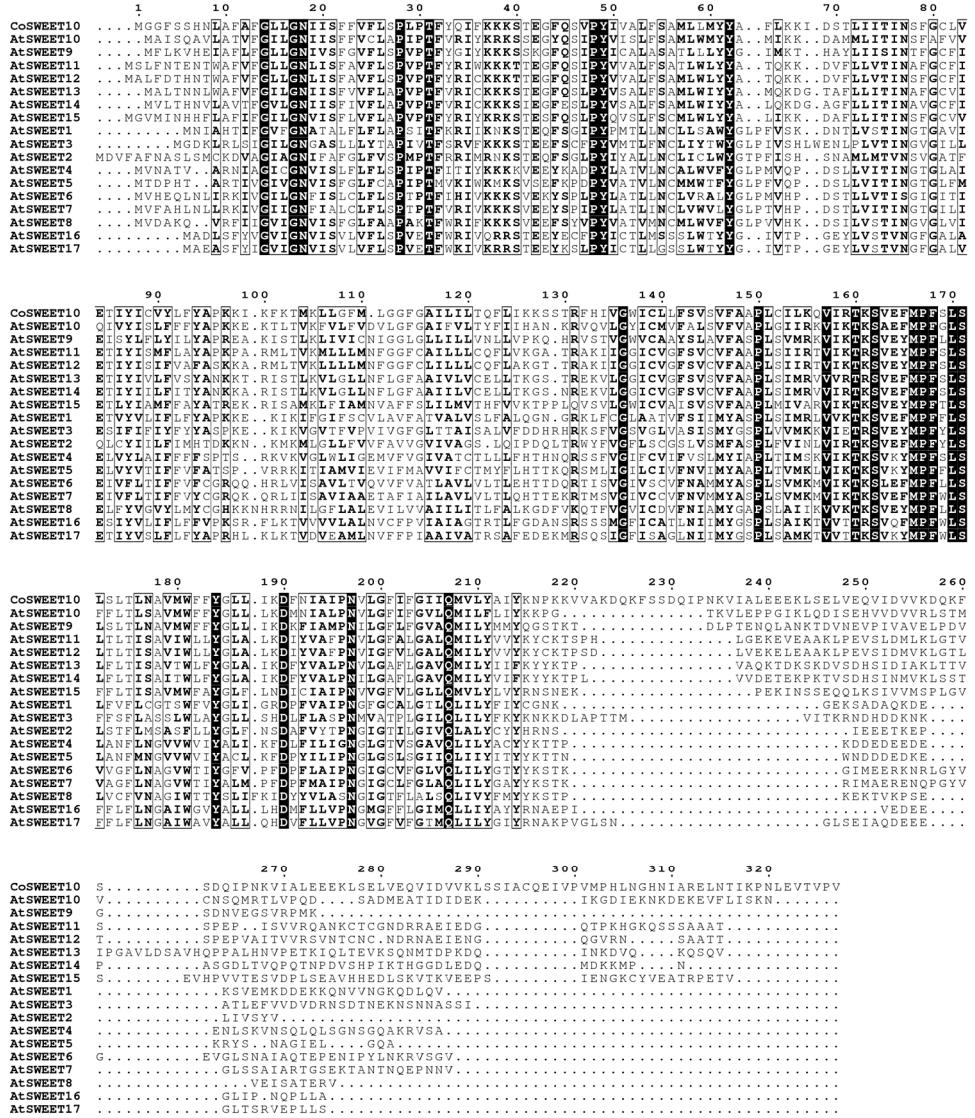


Figure S1. Protein sequence alignment of AtSWEETs and CoSWEET10.

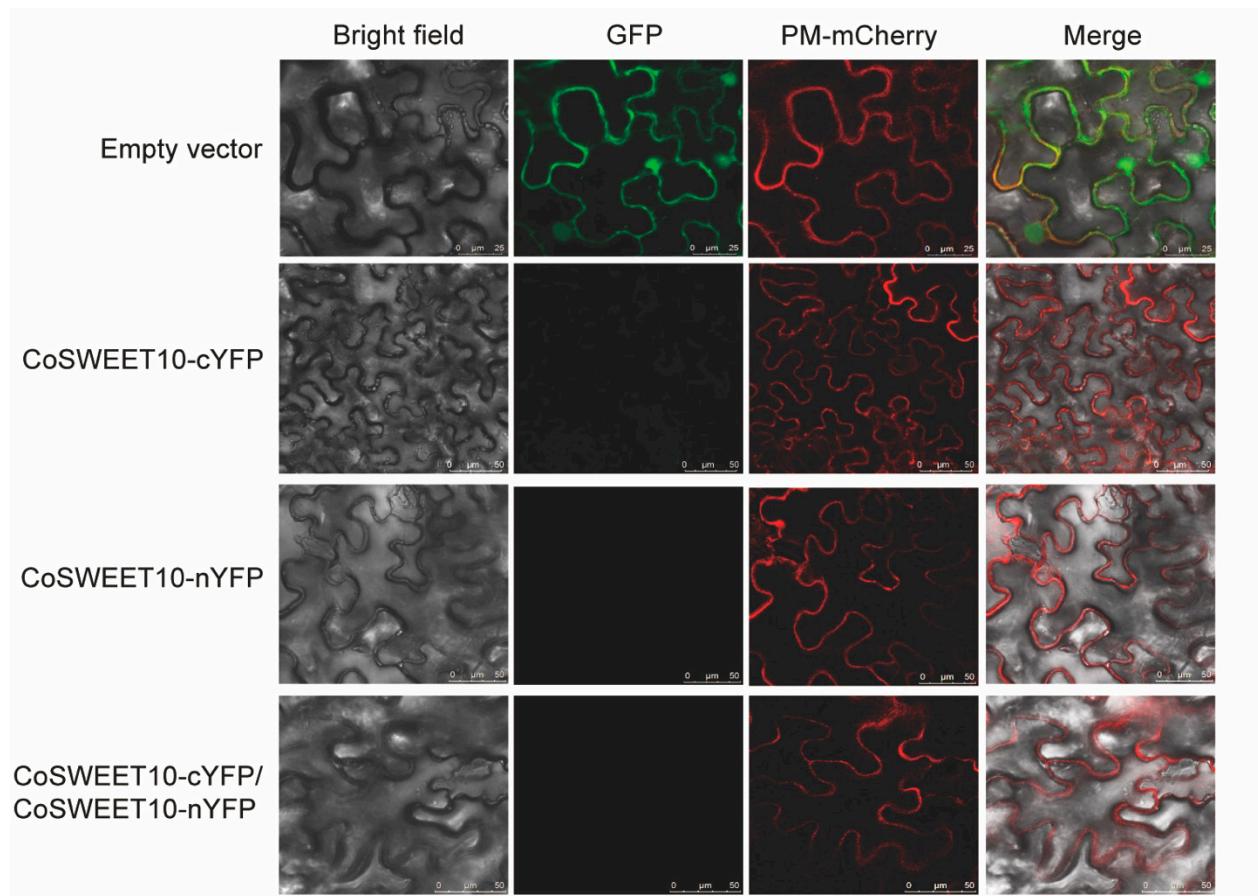


Figure S2. Bimolecular fluorescence complementation assay of self-interaction of CoSWEET10. Scale bars = 25 μ m.

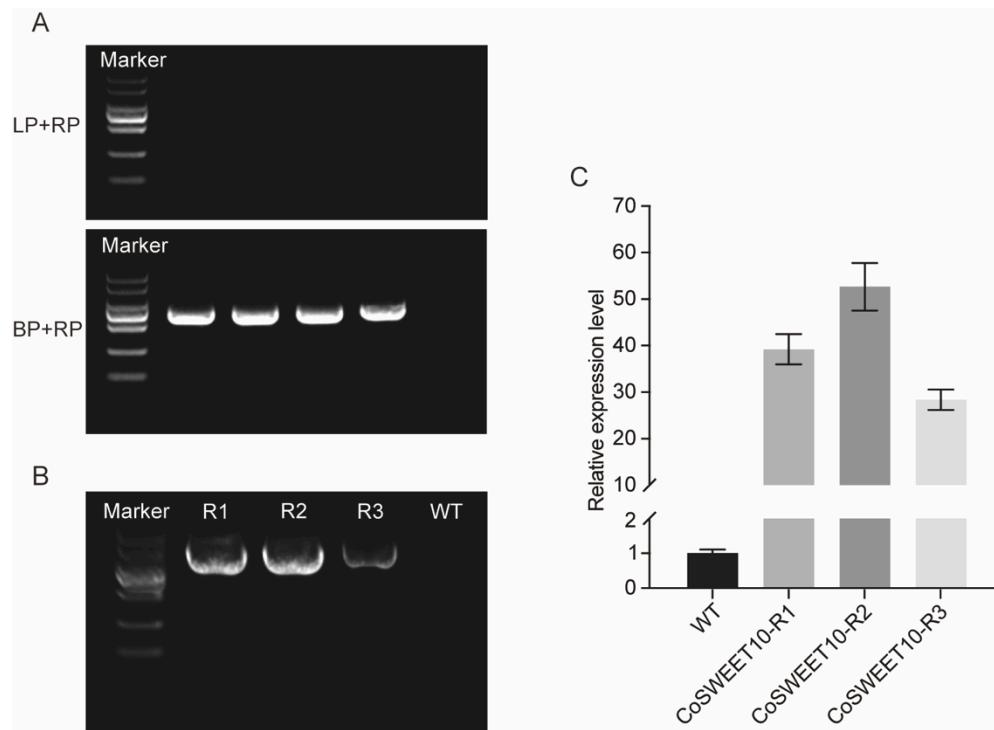


Figure S3. Identification of mutant and restored lines of *Arabidopsis*. (A) Electrophoretic image of PCR products of atsweet10 mutant. (B) Electrophoretic image of PCR products of WT and restoration lines. (C) Relative expression levels of CoSWEET10 in WT and restoration lines of *Arabidopsis*. Transcript levels were determined by qRT-PCR and relative to GAPDH. The expression data of WT was normalized to 1. The data are shown as the means \pm SDs of three replicates.