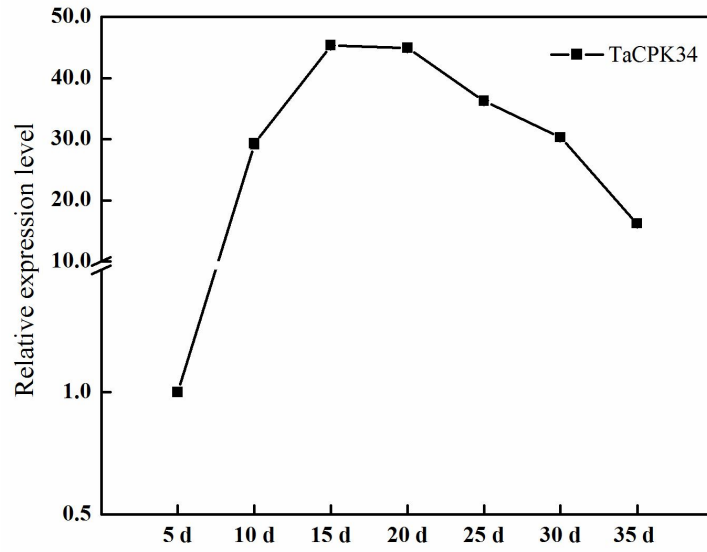


TuCPK34	MALKFLRSRMFLMEDHTGVIKY....RQTM	29
CS-TaCPK34	MGNCCAGSGDAEPEAAAADPSTRRAGASVQAGGASPPSAPAQNKPAAIGFVLRGPMEDVRSIYTVGKELGRGQFG	75
TuCPK34	VIEEKYILATGQKFACTIAKRKLSTKEDVEDVRREVQIMYHLAGQPNIVELKGAYEDKQSVHLVMELCAGGELF	104
CS-TaCPK34	ITSLCTHRATGQKFACTIAKRKLSTKEDVEDVRREVQIMYHLAGQPNIVELKGAYEDKQSVHLVMELCAGGELF	150
TuCPK34	DRIIAKGKYTERAAAALLRTIVEIIHTCHSLGVIHRDLKPENFLLLSKEEDAPLKATDFGLSVFYKQGTTHACIYL	179
CS-TaCPK34	DRIIAKGKYTERAAAALLRTIVEIIHTCHSLGVIHRDLKPENFLLLSKEEDAPLKATDFGLSVFYKQGE...VFK	222
TuCPK34	LLLSRPSKIANETASFRCSRKNSGAIVGRGGVQGHGQRLHRAGESEHGIFNSILRGQIDFSSDPWPRISSGA	254
CS-TaCPK34	DIVGSAYYIAPFVLRKRYGPEADIWSGVIVYILLG...VPPFWAEESEHGIFNSILRGQIDFSSDPWPRISPGA	294
TuCPK34	KDLVRKMLNSDPKKRISAYDVLNHPWIKEDGEAPDTPLDNAVMNRLKQFKAMNQFKAALRVIAGCLSEEEIRGL	329
CS-TaCPK34	KDLVRKMLNSDPKKRISAYDVLNHPWIKEDGEAPDTPLDNAVMNRLKQFKAMNQFKAALRVIAGCLSEEEIRGL	369
TuCPK34	KEMFKSMDSDNSGTITVDELKGLGKQTKLTEAEVEQLMEAADADGSGTIDYDEFITATMNMNRMDREEHLYTA	404
CS-TaCPK34	KEMFKSMDSDNSGTITVDELKGLGKQTKLTEAEVEQLMEAADADGSGTIDYDEFITATMNMNRMDREEHLYTA	444
TuCPK34	FQYFDKNSGYISKEELEQALREKGLLDGRDMSIEIVSEVDADNDGRIDYSEFVAMMRKGAPEGANPKRRDVVL	478
CS-TaCPK34	FQYFDKNSGYISKEELEQALREKGLLDGRDMSIEIVSEVDADNDGRIDYSEFVAMMRKGAPEGANPKRRDVVL	518

Supplemental Figure S1. Amino acid sequence alignment between TuCPK34 (EMS58754) in *Triticum urartu* and TaCPK34 in *Chinese Spring* (CS-TaCPK34).

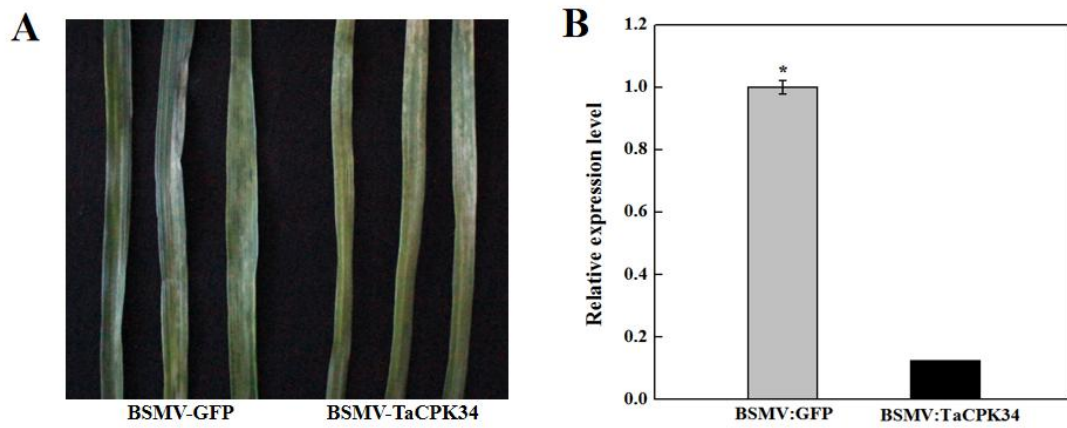


Supplemental Figure S2. Abundance of TaCPK34 protein in wheat grains after anthesis. Notes: expression level of TaCPK34 protein at 5 day after anthesis is acted as control (value=1.0) to calculate its expression levels at other sampling timepoints (10, 15, 20, 25, 30, and 35 days after anthesis). Each value is the mean \pm standard deviation of at least three independent measurements.

TaCPK34-3AL	GACCGGATCATCGCCAAGGGCAAATACACGGAGCGCGCCGCCGGCCCTGCTCCGCACCATCGTCGAGATCATC	525
TaCPK34-3B	GACCGGATCATCGCCAAGGGCAAATACACGGAGCGCGCCGCCGAGCCCTGCTCCGCACCATCGTCGAGATCATC	525
TaCPK34-3DL	GACCGGATCATCGCCAAGGGCAAATACACGGAGCGCGCCGCCGATCCCTGCTCCGCACCATCGTCGAGATCATC	525
TaCPK34-3AL	CACACCTGCCACTCCCTCGGCGTCATCCACCGCGAOCCTCAAGCCCGAGAACTTCCTCCTGCTCAGCAAGGAGGAG	600
TaCPK34-3B	CACACCTGCCACTCCCTCGGCGTCATCCACCGCGAOCCTCAAGCCCGAGAACTTCCTCCTGCTCAGCAAGGAGGAG	600
TaCPK34-3DL	CACACCTGCCACTCCCTCGGCGTCATCCACCGCGAOCCTCAAGCCCGAGAACTTCCTCCTGCTCAGCAAGGAGGAG	600
TaCPK34-3AL	GACGCGCCGCTCAAGGCCACCGACTTCGGGCTATCCGTCTTCTACAAGCAAGGGGAGGTGTTCAAGGACATCGTG	675
TaCPK34-3B	GACGCGCCGCTCAAGGCCACCGACTTCGGGCTATCCGTCTTCTACAAGCAAGGGGAGGTGTTCAAGGACATCGTG	675
TaCPK34-3DL	GACGCGCCGCTCAAGGCCACCGACTTCGGGCTATCCGTCTTCTACAAGCAAGGGGAGGTGTTCAAGGACATCGTG	675
TaCPK34-3AL	GGCAGCGCCTACTACATCGCGCCGGAGGTCTGAAGCGGAACCTACGGGCCGGAGGCGGACATCTGGAGCGTCGGC	750
TaCPK34-3B	GGCAGCGCCTACTACATCGCGCCGGAGGTCTGAAGCGGAACCTACGGGCCGGAGGCGGACATCTGGAGCGTCGGC	750
TaCPK34-3DL	GGCAGCGCCTACTACATCGCGCCGGAGGTCTGAAGCGGAACCTACGGGCCGGAGGCGGACATCTGGAGCGTCGGC	750

Supplemental Figure S3. The location of silenced gene-specific fragment in full-length of the *TaCPK34* gene.

Notes: Length of the selected fragment is 219 bp (from +505 to +723, the translation start site “ATG” is +1).



Supplemental Figure S4. BSMV-VIGS-mediated silencing of the *TaCPK34* gene. A, Phenotype of the fourth leaves of BSMV-VIGS-TaCPK34- or BSMV-VIGS-GFP-inoculated wheat seedlings; B, Transcripts of the *TaCPK34* gene in leaves of these two treatments. Transcripts were determined by qPCR using the *TaActin* gene as the internal control. Each value is the mean \pm standard deviation of at least three independent measurements. Asterisks indicate statistically significant differences ($P < 0.05$).

Dehydrin DHN2 (NCBI accession no. XP_020155660.1; IWGSC accession no. TraesCS5A02G369800.1)

AGGCGGTGTTGTGGATCCGGTGACAGTAGTAGATTGGGATTCCTCTGTAAATTAGGGTTGCTAAGTCGCGGGCGCATTGACCATTGGCTATG
GTGGCGGCGACACTCCATGTCTCGTCCGGGTAGCAAGGCAGGGCGATGTCGCCGAGCCAGAATAATGTCATTCTCGCCTTATCTTCGCA
CCAGTGGTGCCTTTAGCACCTCGAAGGG**CACGTG**AAGGTGTGTCTCAAACCTAGATCCAAACATATACACATTCTCACAAGTTGATAATAT
TTCAAACATATAAAGGACAAAAAGAAATTAACGTAATCTTAGATGAAACAGACGTTGCAAGCATGTCTTTGGTTTGATCATTTGAAACGTC
GAGCATGTTGACCAAAATGTTGTATGTGACACTCTCTCTCCCTCTCTCTGCAACATGGCTGCCGGATGCTTTCCGTGCCAACTCATTTC
TCTTTAGTTTCATGTCTAGATGTACAAGCAATAATGCAATACATTTTCAAGATAAATAAAGTTGAGTAAATGCATCGTTGTTAATGGA
AGGATGGATGTAATGCATTGACCTTCCCCGATAATATATCTTTGATTCGGAATGTTGGCGGCACTAGCTTAGCCATTTAAAAACATTATCT
ATCTAAATATCTTTAAAAATACAATAATCCATCAATAATCAGAATGTGCCAACCAACAGTATATATAGAGACAACATTGATAACGAGTTA
TGAGCTTCGATCTACAAAGATTGCATGGAGATAGAGTTGATGGAGATGGTTTATGGCACCATTATGTCCACAAGTGTTCATAGTATATGA
TGAATTTAGCATCTCTATTTCCACATTTCTGTCAACCTTTCTCTTCTCACTCTATTTTTGGAGACATATTTTATGATGGAAGGTGGAGTGT
CGATTTCCGCTTCCAGCAGCACTTGATTGGCTTGTAGAGTGTGCATGATAAGACATAGATCACTAGTGGTGGAGCTTCATATGTTAGAGATA
CGACACAAATCGAACACGATGAAGAACGAAACCAAGCAAGGGATACGGGATTTTAAATGTGAAAACCCCTTTAACACGAAACGAGAAAAAC
CAAGGACGCCAGCCAGACAAACTTCACTGTATCAGAGGAGTTTAAACCTCAGGAATTTACAGCCGATCAATTTATCTGTCAGTGGCTTA
CAAAACCCACCCCTTCCCCCCCCACCCCAAGCGTCCCTGTGCGGGGCGAGCCACATGGGTAACTTTAGCCCAAGCCTACCAGCGC
ACCGCTCGCTTCAAAGCTAGCCTTTTCTCTTTATACCTTGTATGCTTCCAAGAGGCAAAAGTTATATCGGATGCCAGGGGCGAGAGGCCAA
CGGTTAAGACTGGGTAGGCCACGGACGAGGAACCGTTGCGCACAAAGGAAGAGGAAAGAGAGGAAAGATGTACACTGGTCTGTCTTAGC
CGTTGGAAGAAGATCCAGCGGTCCCCAAAAAAGGACCTACGCAAAAGATATTTTCAAAGATAACGGGCGCTTGTAGTAGAACACATATTTTC
CAGTTATCAACCCAGCTGTCTGCTAACGCAATAACTAGACGTACATGTGATTGATACAAAACCTTTACAGTTGAAACCTGGCCCTCATCT
AATTTGCCCTTGAATTTTTCATGGATGGGCCACCCCTTCTAATTAATCTCTGCAATCACAGCCCATCAGCCCTTAAACTCCCCGTAACCT
CGTGTACGTGTAGCATGTCTCTGCTAACGTGTACCACTACTATTCATGCATATGCATGCGTAGATGGAGGAGTCACTGCCCTTCGAGAGAGT
GCGAAGCCCTACGTGCCCGCCGACGAGCCGAGTGGCTTTGTATATTTGGCGGATGACCACCTCCACGCACTTGTACTGGTGTCACTGTGC
TTCTCGAAGTCGAAACCTGGACCATTCTGAGACCTATAAATAGCCACCTGAGTGCACCTTGGCTGCATCGCAACCCGAGCAGTTCAACA
CTTACACAGCCATACACATCACCTGTAGATCGACCGGTGTCTTACCGGAC**GATG**

LEA3 protein (NCBI accession no. ALD18912.1; IWGSC accession no. TraesCS1B02G381200.1)

GAAAACACAACATTTGTTAAAAATATTTTGTACTCCCGAACAAAATTTGAAATATGTGAACACATTTTGAATGGGAACATTTTACGAA
ACTCGCGAACAAAAATTTAAAAACAACACATTTTGTGAAATTTGTGAACAAAATTTGAAATAGGAACATTTGTTGAAACTCACAAACAAA
ATGAAATATGAACATTTTATTAATATGCAAAACAAATTTGCAAAAGTTGTGAAATTTTGAACAAAACATAAAGAAAAGAAACAGAAACAG
AAAGTAAAAAGGTAATAAACAGAAAAGGAAAAAAGAAATAGAAAACAATAGAAAAGCCGAAAAGAACAGAGAAAACGATACAGGAAAAAC
CCGGTTCAGGAACCTTCTAGAAGTTCCCAAAACCGGTTGAGTGGGCGGCCATGTCTTTGGCTCGCTGGCTCCTATGTGGCGTTCTCT
GTGTGATTGCTCGACAGTTCCCGCAGCGAGGCGCAATAGGATTTTCCGTGTTGCGGCCGGGAAATATGTCTCACATACTGTGCTCGCTTC
TGGAGCTCCTCTAACCGGCTGGCCCATCATTTGTAGATCATGTGCGTTTTCGGAAGGTTCTGTGGTCTGGTTCCAGACCTGTTTGTAGA
ACCTCATTTGTTTCTTCTTCTTATATATGTGTTTTTATCTCGATCCCTTACTTTCACAGTTTGTTCATTTTTCACACACATATCT
CTTTTCCAATACACATTTGATACATATTCAGAATACATGATGTACGTTTTTCAAAATGCATGTTTTGAAAAGCTTTTGAATACATCTTAAACAT
TGTTGATACACTTTGAAAATAATTTAATGGCATTAACTATTTTCTAAACTACGCAAGATATTTTAAATGTCAGAACATTTTGAAAAAC
ACGGAACATTCATTTAAATATGAAGTATATTTGTTGAATGATATGAAACATTTTGTATTTACATGGTATGAACATTTTCTAAATATGGC
ACACATTTTATGAATGATATCAACATTTTATAAAAAGTTGTGCAAAATAGTTTTTATACTGCATGAATATTTTCATGTGGGATGAACATTTT
AAAAAATGAAGTAAATTTTATTTGGAAGACGCAAGTAAAAAATAATACGATCCGCTTGGAAAGCTAGGGCTCTTCTTGCAGGGCCCA
CTTCATCTAGGCCATTTCCGACATCCTTGAGACGGAGGTTCTTCACTCCTACAGCTAGACAAAGACGCGCAATGCCCGCGTAAAAA
AAAAAAAAGATGCGCAATGCGTTGAGCTTCAAAATATTTTCTTCTTGGTTATAAAACGCGAGATTTCCGAGCGAACGTACGGTGAAT
TTTCTACCCGCTGTCAACGCTGCTACTTCTGGATGAAGAAGCGTCCGATCTCATCGAGTGGAGCGACGTTGCGTTGTTTATTCGCTTGTCT
CCTTTTGGGTAAAGACAGGCATCG**CACGTG**ACACCCGCGCAGCAACAAATACACCGAGAGAAAAACACACGTCGATGGATCATCAG
AGATGCCGATGCACATGGCGGCGACGATGGCGTGCATGCTCCACCGCACCGCCACCAAGTTGCAACCTCGCAGCCAGAGAGCCGCATC
CAACTTGTGCTCGCTCGCCACCGCTTACACTTGTATTATTCAGCTTCTTCCGCCCTTTTGGCTCTTCTTCTCCGGCATGGGCT
CGATCGAATCGGTTCCATCTACATGGCAGCTTCCGAAAGTACCGTCCGAGGAGCGGCAACGCGTGTCTTCCCTACGTGGCGCCATGTAC
GAGCACCCGCGCAACGTGGCTCATAGCTTCTGCTACAAAGGCCACTGCTCCGTGCTCCTCACCATATCAAGAAGCCGATCCATTTCC
AAGCACAGTCGAGCAGAAGCCTAAAGCGAGTGACATTTCCCTTCCGAGCTAGCTCAAGAAACCAAT**ATG**

Low-temperature-induced 65 kDa protein-like isoform X1 (NCBI accession no. XP_020162307.1; IWGSC accession no. TraesCS1D02G163800.2)

GGCGACTTGGAGAAAGGAAAAATGGTGGTGCATGATAGCCTCCCGTTATACACACAAGGAAAGTGCCCAAGCCGGAGTTGCATGGACCCC
TCCTCCACCGGGGTAGGCTAAGCTCAATACAGATGGCAGCCATGTCCTCCAACAGAGAGGCGGGGTGCTATGATTTCTCGTGTATGATAG
AGGCAACATCATCTATAGCTTGTAGACAGCTCCTTACGTGCGATAATGGCTTGAAGCAGAGCTGGCTGCGTGCAGAGAGGGCTGGAGC
TTGCGCTTTACCGTACGAACCTGCTTATATGGTTGAGCTCGACTGTGCAAGCGATGTCTATGCTGCTAGCACGTAAGGAGATAGATCG
CAGTACCGTGTGCTCATTGAGGAGATTCGAAGACTAGCACAAGATGCTCGTAGGGAGATTTTTTTACTCTTATTAGTTCGCTCGCAGAATAA
GGTTAGTTCATCGCTTCCGCGGTATGGACGTGTACACCTGCACTGTAGTTGGCTGTGCTCGGGGCTGGACTTTGTTGTAACCTTTCCGA
AGGCTGATAGCCTCCTTGGAGTAAAGAAATCTCCTTTTACCCGAAAAAACAACGCGCACATGTGACGAGATGGAAAGCCGCGCGTCCA
TGCCACGGGGTGTCTTTCGATCCAGGGCAGGCGGCCACCATGCTCTGCTCATGTCAGCACATCACAGCACGCACATGGCCAAGCACGTAT
CGTCAAACGCTGGCGGCTGCGCGCCGACGCGGCGACTGCATATGCTGCTCGAACTCCGCTGCTGCATCCAAGCTGTTCCGAGAAATGCC
CGTCCGCTGCTGATCGATGCATGCACGTACGCATCACTGCTGAATCGATGCACTCCCGGAGACCAAGTACCATACAAAGAAAAGGAA
AGAAAAAGACATACGTAACCGTACAAGCTAGCTTCAAACCTGCAGTGTGATGCTTCCGGCTGGATACGAAAGCAACTGGAGTACGCT
CGGTGGAGCAGTTTCTACGCACTCGTCCGAGTATGCAGTGCAGGCGCGCTGCAGCTGCGTAGGGGAGGAAACAAGCCGATCGATACGAC
ATCGCTATGGCATTCTATGATAATGGAATACAAATATACTTCCGACAGATAGAGCGGGATGGTCCGCGGTCAGCTCGGTTGCTG
CTCGAACCCCTGTCGGGACTTATATTTTTGCTGAAACCCCTCAGTATTTCTTCTCAGCACACTGACAAGACAGGACCCACATATGTG
TACACCGACATGGCCATAATTAATTTCTGCAAGTCAATAATCCCGACTCCTTGTGCCATACCAAAATCCCTCTTAAATCGGAGTGAA
GGTTCAATTTAGAGCGGATCAAAGAAAACAGGGTACAAACTTCAGAGATTTGGACGTGAGGGTCTGTTTTAAACGAGATCTATAACATTAAG

GTTTAGATCAGACTTGACAAATATGCTTTGTGTAAGTTGCATGTCATATCTTATTGCTCTAATATTTGGTCAAAGTTAGCCTCGAAAAATGCA
TTAGGCCTACAGACGAAAGGAGGAGTAAACCTGTAAAGAGTAACCTGACACCCTCAATATTTGGTCGCTGATATACCGAATGTGTTTTC
TTGCCATCGAACTGTTTCTCATAAAATCTTTTCAAACACCGACCAAGAGGCAAAACCCGACGCGGCGCATCCCGGGCCAAAAGCGGGAC
GCCACATGACGAGACGGCTCGTCGGCTCCATTCACCTCGTCGTAACCGGGAACCGCTCCATGATCACCCTGGCAATCAGGGATAGCTG
GACCTTCCAGTCGCTCCACCCTCCAACTAAACCCCGTCACGGCAGGAGCGGCAGCGCCACGCGTCCCTCTTCTCCACCACCC**CAC**
GTGTGCGTCGAGGTGGCGTCGCTCCCGTCTGCTCCGCTTATATCCATCCTCAGTCGACCAAGGCTTTCACCATCCACACACAGCAT
TTAGCGATCGAGCAACAAGCAATTTCTGTCACAGTATCAAAGAGTCTGAGATCGCTAGTAGCTGCACCGACGTACGTGCGAC**ATG**

Barwin-like (NCBI accession no. XP_020147546.1; IWGSC accession no. TraesCS2B02G581900.1)

AGACATATTTTTGCTCATTTGCATGGTAAACACTTCTTACAGACTAAACAACCTGATGCCCGAATGCTCCACCTACCCGCAACATGACGAC
CAACGCACCTTCATCATGGCATAAAGACATCTCTATGCAGAAGCCACCAACAGCGTCACTAATAGATAACAATGAGCTGGATCTGGTCGAAC
TAGTAATATCTGGTCCCGGTGACGCTGCAGCAACCAATGTGAGCAACAGCTAGCTCGTGGGGACGAATCTCCAGAGAGCCAAAATGGGG
GCACCCACCCGAATAATTTGGGATGAGCTGCGGGCAGGAGCACCAGGCTTGGCGCCGACGTTGTTGCGCTTCCACCTGCTGGAGACACA
AACAAAGGGAACAATTCACCATCGGCAGTTGTCACCGGGCAGGAGGGGCATGCCCTTCCACCGCGAGACACTCCCGTCGCATCAAC
GCGTGGGCTTAGCCCAACGACTTCTCCGATGACAGTGTGAGAGAAGGAGGCAAGGAAGTGGCCTGGCAACTCGATCAAGGGTATGCCTA
TGTCGTTAAGAGGCCATGAGGGAACAGCTCAGGGGTAATTAAGGTTTATAGATCTTACAATATAAAGTTGAAGACGATTTGTGGACCCA
GGGACGGGAGACGATGATGACCCATGATTCATCAAGATCCGAAAAGTGGTTTGTGGTTTGGCTTAAATTTGTGATGCATGCAACT
TTTTGGTACAACTTTTGGCATAGGCCACATGCCCATCCATCCACCTCCAATGCTTTTCATTTGTACTTGTAAATTTGAATCTATTACATC
TTTTGAATCAAAGTTCAATTTATATTTTCGTTGCATATTCATGTCCTTGTGTCGAAAGCTTTGAAACAAGCCCTTTTGAATACGTTTTG
ATAAATCTCAAACCTAAATGTTGATTTCAACTACTAAACCTAAATAGAAATGAATGATAAAATTTAGCAAGTTTCAAAGACTAAACCTGAAACCC
TAAGCCCTAAGCCGAAGTCTAAACCGTATACCCCTATCAAATGTAACCTGGTGAACCTTATGATGATTTCTAGTTTTAATATTTGAAAC
TTAATAAATAAATAAAGATATATAAATGTATTTAAATTAATTTTGTTCAAAAGACTTGTGCAACGACACGAATATGCAACGAA
ACTTAATTTAGACTTTTGCTCAGAAATACAATAGATTTAAATTTTGGATAAACGAAACACATGAGAGTGGGGTGGGTGACTCATGC
AGCTCTGCCAAAAGTGGCAAGCATGGACCCAGTACGGCGATTAAGAGCTAATGACATAAACTATCTAGTAAACCAATCTAAAGCAAATG
GGTTGCCGATGCCCTTTCGCCCTGGTGGATTTTTCGATGTGAAGTGTGGGTATACAAAAAATGCAGCGGAAGCATCTATATACTATATAA
TTAATTTGTAATCTAATTTGTGATTTATATGTCGAGTAAATTTAGAAATGATGAGGTCGGTTTTGTTTTGCGTTTTTTCTTTGGACTTG
TTCTAGGCGATTGGTGTGTCGGTATCTCAATGAATTTGTGAGAATCTATCTCATAACAATAAATCAAGCTATCTTATCTAAACTTCAAT
TATGCGCAAAGATATATCTCCCTCTAGCTTTCGAC**CACGTG**TTTGGCAATTCAGCGCATAAATTTGTAGAAAGTACACGCTGACATGAT
TACATAGGCATCCATCCACACTTGTAAACAATTTTGCCTAATTTTCCAGCTAGGTAGCAGGA**CACGTG**TGCCACAGCCCTTAAAGCATATCT
GCACATGCTTATGAGCTGTTATGCAATTTGATTCCTAGTTTGTAGAAAATTCGTGGAGGCTGCGAAGAGAAGAAAGTCTACCATCACCG
TATCATATATTAATTTCCAGCGTTCCATTCACCTCTATATAAATAAATGGTAGTGGCGAAGAGCGACTCCCATTCGAGTGTGACACCTGCT
AGTACCACCTCTCATCTCTGGTACGATCACCCCTCCTGCTGCGTTGACGAAG**ATG**

11 kDa late embryogenesis abundant protein-like (NCBI accession no. XP_020190115.1; IWGSC accession no. TraesCS5D02G177300.1)

TGCGAGATGGCGATTGGATGGTGTGACACATCTTGTAGCGAGGAGGCTGTTTGGCGAAATGGACTTTGGATTGTTATAAAAATTCAGTT
TAGACCAATTTCTGTTAAACATAACAATGTTATTTGTGACAACATATGAAAAAATGATTTAGATAATCAAATGATGAGAAATTCCTAA
ACTTACGTGCGTTG**CACGTG**CACCCTTTCCAATTTGAAGGGCTGCTTATCGGTTTTAAATCTTGAAGTTTGCACGGTCACTAATATGACCAT
GCTATTTTAGAGTGATAACCTTCATTTACAGCAGTAATGAACTTGAATGCCAGTTGACTAACAGTAATAAACACCAAGAATACTAGTTGA
TGTTAATGGGAATTTAGATTAGCGATGATTCATTTTATGCTCTGGTGAACGGGTCAAGCCGGTTTGCAGCGTGGATTTGCGGTTACTTA
TTTTACTACTAACTATATATTTGTTTGTGCAAGGATGGATATGAGTTGAGAAAGTAGTTTTTATTATACTTGTCAAACATCGTGGGAATGA
AGCTAAAGACAACTTTCCGTATATTTGTGAAAGAATTTCTTAAAGCGTATAACCTAGATATTAATAATTTTATAATAGATGTTTAGTTGAACT
CCATTAAGTTTGTGTAACAGGACATGCGGTTAATTTTTCTTTGGCAATTTAAAGTTCATAAATGTAACCTTAAATTTAATAAATTTGTGAT
GTGTTATATTTGCTGTACGTATCAAATTTAGCATGCATTATCTTTATATACTTGTCAAACATTTCAAGAGCCCGTGGCAACGCACGGGC
ATTGACTAGTACTAGTATTTGTCAGCATTTCTTTACTGCAAAATACCGGTAAGGCTACTAGTCGATGATTGAGAAAGAAGTTGGCTAAGAG
CAACTCCACTCGTTGCGCCCGCAGCGACGGCCGGCGGTTATTCAGACCTTCGCCCGGCGCTTTTTAGGCCCTGGGGGCATCTAGGTCCC
AGCCACGCCCCAGAGGCCGACCCCAAGACGTTTAAATTCAAACCTGACATTTCCCGCTACCCAAAAAAGCCACAAGTCCGGCGATCACCAT
GCCACAGTTCGGCGATCCGACGCTTTGCTGGTCCAGGGAGAGCGTCCGGCCGCTGGCCGCTGGCCGATTCATCATCCCGCGCGAGACGC
CTCTGCTTGTTCCTCCACCGGATCTGCCCTGCTCCGCCACGGCCCGCCGCCCTGTCCAGGCCCTTTGGCGTTTGGCGTTGAGCTGTTCT
GCCGCTCGGTTGACAGCCTCCCGCGCTGAACCTTCGCTTCCAGTCGCGCTTTGACATGCCCGGGGCTTGGACGGCGGTGCCCTCTGCT
TCGGCTGGTGGCTGGCATCGGTAGGGCCCGAGGGCCGCTGACTTCTTCGGCGCATGATGTCGGATGAAGGGGAGAGGGAGAGAA
TGCGGGGAGAAGGGGAAATGGAGGAAACGAAGGGGAAAAGCAGGGGGATCGCGGGGAAAAGGGCTTCTCTCGCCGACAGAGCGGACC
CACGAGCCTTTTCGCTTACGGCGCGCCCGCAGCGACCTCCGGGGGCTTGGGTTGACTCGGGTTCGCCAGCTATTTTGGCCCGGCGA
TAAATGAGTTTGTGGAACGCGACTGGACCGATTTTGGGCACCGGCTTAAAGTAGCCTCTTCCGGCTGGAGATGCTCTAAGTTGAAG
CTTCTCGTCTCTAACCAAAAACGACCAACTCAAAGAAAACGAAAAATAATCGAGTTGCTGTTACTTTGAGGAATGATTCGGGTTCTAGA
GGACACGCGTGGAGTGCACAGGCGCCGCGACGCTTCTCCGTCAGTA**CACGTG**CCCTCGCCGACCTGCCACCTGGGACACGTCCTCC
CGTCCGCGGTACGCATCAGCGCTTACATTCACATATATATACTCTACGGAGTACGTAGTTACCAGCGTAGAACCGCATCGAAGT
GAAGACAAGAAAACAAGAGATCGACCACCCGAGCCACAGGAGACGCTGAGGTTTGGATTTTGTAGCGAGCCAGAGGGAGGG**ATG**

LEA 3 (NCBI accession no. ALD18913.1; IWGSC accession no. TraesCS1D02G369200.1)

TATCAACAGAGCAATTAAGTGTCAATTCATATTCATGTACATCAGACAAGGGTATTTATAACTAAAATAGCACCTCACATTAAGATCAGTCA
ACTGCTCTTAAACTAAAATTTAGGGATTTATGTAAGTGTGATCCAAAGCAAGCACTCACCGAGCATGAAATCCACATCTCTAGCAGCCT
CTACTTCAATCCATGACTCAGTTGTTGGCTGTCTTGACGGCACCACACCTTACAGCAACAGTGAGAGGGAGAACATAAATAAATCA
AACAAACAGAAAATTTCTCAGATCGGTACAATGTTGTATTAACAGCGCAACACATCAACTTTGAATTTATCTTGTGTTCTTGTCTCGATG
CCAGCTCTGCTGACTAAGATGTACAATGAAAGAGCAGAAAAATGATCTTAGTTGCGCACAAAAAACATTTGTTGGGTGAAGGAACCTCG
TTTGGTGAATAGTTACATCTAATAAACAATATCTTCTTAAAGAACCAACCATATTTCTACATACAAAAGTGAAGAGTGAAGATGCTA
AAAATTCGAAGAAAACAATCTTCTTTCATACATTTTTTTCGTTGGTTAACTTCCATCTTTTTTGTTTTTCTTTATATTTCAAATAAGTCT

AATTCATATACTTCAAAACTTAATTTATGTAATAATTTAAAAATATTCACCATGCATTAATAAATGTTAATGCATTTTGAATATTTGATCA
TGCAATTTAGAAAATGTTTTACTGATCTGGAGAATTTTGTATTGTTTTTAAATTTATTTTCTCTCTTACCGTTTGTGTCTTAAAA
AATGTTTCGTGATATTTTCAAATATGTTTATAAAATTTAAATATACGTTTCATGTAATTTCAATAAAAAATGCATAATACCATTCAAAAACCGA
CTCGTGAATGATATAAAAAACGTCACATGTCTCAAAAAATGTTTCAATGAAATATGACTAGTTTTTATATCATTAAAAAAATGATATAA
ACATTTTATGATATA**CACGTG**AAACATGTTTTACAACGTTGAAAAGTTTTTAAATGCATGTTTTAAACATGGCAATATATGTTAAACATTT
TTAATACATGTTGAACATTTTTAACGCGTTAAACATTTTTTAAAGTATGCAAAACATTGCTTTACGTTATATATATGAAATGTCATAGC
ATTGTTTTTAAATATGTAAGATTTATTAATAATGTCATGTATATATTTTTGATGGATATGAAATATTTTTTGGGAATCACTGAAAGTTT
TACACTTCATGAATATTTCAAATGTGTGACGAGCATTATGAAAATTTGAGTGAATTATTTTTAGTATTTTACATATTTATATAAATA
ACATTTTTTTTTAGAAACGTTTATAGATAACAACGACATTGCTTCGGGAGCCACCGTTTCTCTCCAGATGGGCCCTTACATTTGGGCCATTT
AGGACGTGCTTGAGGCTAGGTGTTCTTTCTGCTCAAATTTTCAAAAAAAGCGAGGCAAAGACACGTCAGGTGTGGAGCTTCAAAATATTC
TTCTTTCTCTCGAGTTACTTCGCGAGATTTCCAAGAGTACGTATGGTGCATTTTTTTTTCTGTTCTGTTGTCAGTACTACTTCTGAGC
GAAGAAACGTCGATCTCATCGAATGGAGCGACGCTGCGTTGTTTATTCGTGTGGTTTTCTTTTTGCGGTGAGACAAGCATCG**CACGTG**ACAA
CGCGCACGAAAAACAAATCACGCCGAGATCGAGAGCAACGTCGACGGATCAGAGACACCGATGCATGCACATGGCGCGACGATGGCGT
TCGCGTCCATGCTCCACCACCGCGCACCAAGTGTAAATAAATCGACCAGGAGAAAGCCGATCCAACCTGTGCTCGCTGGCACCCTGGAG
GTGCACCGTAAATTTGCTCGTGTGTCACACGATGCACACCCCTTTACACTTGTATTGTCAGCTTCTTACCCCGCTTTTGGCCTCTT
CTTCTCCGCGATGGGCTCGGTGCAATCGGTTCCATCTACATGGCAGAGCTTTGCGAACGTACGGCGGGGAGCGGCAACGCGTGTCTCC
TACGTGGCGGCATGTACGAGCACCGCGCACGTCAGCTGCACAGCTTCTGCTATAAAGGCCACCTGCTCCAACCTCTTACCATATCAC
AAGAAGCCGAACCATTTCAAAGTACTGTGCGAGCAGAAGCCTAAAGCGAGTGACATTTCCCTTCCGAGCTAGTTCAAGAAACCAAA**ATG**

Germin-like protein 4-1 (NCBI accession no. XP_020167477.1; IWGSC accession no. TraesCS2B02G481500.1)

ACTAGGGTTTACCCTGACCCTCGATCTGAATCCGACGGCCGCCCTTGCTTTTCCGCTGATCAAAAACGATCGATGCGGTTGGGGGCGAGGG
GAACCCTAGTCAATTTCTCCCGCGCCGCTCGCTCGCTCGCTCGCTCGCTCGCTCGCTCGCTCGCTCGCTCGCTCGCTCGCTCGCTCGCTCG
GCCACGCTGGCGACGCGACCGAGGGCGGAGCGGCGACCCAGGCGGCACCCGATGAGCCAGGCCCTTCCCTCCCTCTCCGTTTCCAAGA
GAGACAGAGAGGATCCCCGTTTTTCATTTACGCGAGAGGAAGAGCGCGCCAGATCGCGCCGTTGGCTATCTCTCCGCGTGGCGGCTCT
CCCTCGGGTGAGCGCGCGCGGAGGATTTGGCCGCGGTGCTCACCTCCCTCCTTTTTTGTGCTTTTTCTTTCTTTTCCGCGAGC
AATTGCTAGCTCCGTTGGTTCTTCTGCTCCCGCACCTCGGCTTGCCGATGCGGTGTTGGGATCGAGAGGAATAGCGCGCGGCGTGGCGCGC
TCTTGGCGGTGAGGCTCAAGGCCAAATCCGGTGGTTTACTTTGCCCTGTCTAGGGTCTTGGGGGAGGGAGGTATTTTTCTTTCTGTT
TTTGTCTCTGTACCGAAATCAACTAGCCGATCTGGCTGATAACCATTGATAGAACCTTGTGATCGGAGTAGGCTAGTAGATCCGGTAACC
TACCTTCTCTGGTGGGATGAACCTGATCCAGCACCGCCATGGTGTGCGGAGTGTGGCGAGGTTGGTGGCGCGGAGCTTCCCGTCCG
CTTAGCGCAAACCTTAGATCGGATTTGGTGTATCGGTGGTGTGTTGGTGCACGATCAACCTCGTAATCCGTGCCCGGCGACCCACCTCTTA
TATTGCGGTGGCGACAGGGGCCCAACCAACCTATTGTTTGGTGGCGCCCGCATCAGGGCGGAGTCAAGGGCCCGGTTTCGACCTGTTGGGT
CGAACGGGATAGAGATCAACCTAACAATTACATGTCTTATGCTTTTACCCCAATAAAGGTTCCGTTGGCAGCTTACGATAACATCTACATGT
AGGTATAGAGTACCTACGATTTAGTCCATATCTCAATGCATCACTACGTTTGTTCGAAGAGCAGTTTTGATTGATGAAGAAATCAAAAGG
ACCATGACTAGCATGGTCTCCAGTAGTCCGGACCAAGAAACTAAGAAAGACGATCAAAGTAGAATCAACATCAGTGCATCAGCTAGCTAG
TCATCTGCAGATCCGGTGGGCGAATGTTTTATGATGACGCTTACCAGTTGGAGTTTACGACCAATTTTTATTTCTTCCATCATGATAG
CGGTGTAACATTTGAATAGGACCTCTTCACTTAGGCTTGCTTTGTTTTCTATTTTTCTGTAGAAAGTTGTCACCTATTTGCTCATTGCA
CTTGATCAACTCCATATAACAATGAATGAAATGTTCTTTATCGAAGAAAAAAGTACCGACTGCAAGTGGCCAGCAACTAGTAG
CCGGGAATTCGCTACCACGACCTCAAGGCGTTCAATCCCACTATCATACGTTACCGTCTCGAATTCAGCTTCTGCAAGTTACCAGTGGGA
TCCATGCTGCAAACTAAAACCAAAAAGGAACCATATCTTTGTCAGCTCTTCCACCGAAAATGGTGCATGTATGAATTTCCACAATGGAT
ATTACG**CACGTG**GTCACCCTGTATAAACAACAGTTAGTGGGCTGTGAGAAATATACGCCGATCATACTGAAGCTAGCAATGTTAGTAG
CAGTATCGTGGATGCTTACTCAAACACCGGTGATATTAGTGACCGATATAAATGTTGCTAGTGTACCATGTTGTTGGTAGAGCATGCAG
CTAGCCACTACTCCCGGCCACCTTTATGCTGTATAAATAGGACCCCGATACGTGCTTCCAGCGTACAATTACCAAGCTCAACACACCA
GCTTAATTTACCCTGACAGACATTTGTTAGGCTTGTGTTAGTGAAGCTAGCTAGGTAAGAAAAAC**ATG**

Prx113 (NCBI accession no. ACF08092.1; IWGSC accession no. TraesCS2B02G124800.1)

GCCAGCGCTGTTGACGGCGCGTCCGTTGCGCTCAGACGAAAAACAACGCCGATGGCTAAACTATGCCGACGCTCTCCACGGCGCTCGGC
ATATGCTCCTATGTCGACGGCTATACCTACGCGACGGTCTGACACATCTACGCTGACGTGATCTACGCGACGGGGATATGCCGATGGCAGC
CGTAGGCATAGATCTATGCCGACGGCAATGGACCTATGCCGACGGCCCTGGGCCGTAGGCATAGCCCGCAGTCCGGTGGTGTGGATTTT
TGCCCCAAGGATGCCCATTCAAAATACCAGGATCAAGAGTTATGCTACTTTAGCTTTTGCAGACCCACATGTGATAAATGTGGTTAAAAAT
GCCAAAGAGACTGATCAGTGTTTTTTGTAAAGATTTAGGCAAGAATCAGTGGTTCTGGCCAAATTCATAAACTGGTGTTTTGTGCGAAC
CTTGGAACAATATGGTGGTTCTTTTGCATTTCACTCGAGTTGGGCGAGTATCTACGTAGTGCAAAACATCAAGACAAATCCGTTGTTGG
ATCGTGAGCCAAAGAAAGAGCTTGACTTTTGTAGGAGTCCAAGCCTTTCATATCATGGGATCCATCGGGGAAAGAGTCAAGCAAGAAATG
TGCTTATATATGCGCTGGACGCCAATAGATCTCATCATTAGAGTGTCTCCAGAGAATGTCATCTCCACAAGTTCAAGAGGGAAATCA
TGCAACAAGCTCAAAAGAGTAAAACTCCCATATGTGGGACGGGAGACGATAGTGTCTTATTTGATCATGAGGATCCAAGCGTTATCTTTA
AGGGCTTCAAGCATCTTTCAATTTCTCTTCTCAAGGCTTCAAAGATGTGGTGCATGTCTTAGGCTTATTTCCACGACGCCATAGGGAGT
CCCAATATGGTGTCTTTGCGCCATGGCTCACGGTGTATGTTGGGAAGCATAAAAATATGGGTCTCTCAGTGACCGGATTTTTCATGCC
CCACACAGCTTTGTTGGGCTCTTTTCAATTCATACCATGGCCAAATGAAGGCGCAAAGCTCTTACAATTTGTGAGTGTTAGGACGCCAAGG
CCACCGTACTCTGGGGCGCATACAATCTCCAGCTGACATTTGCGCTGAGCTGATCGTCTTGTGGAGCCGCAAGAAAGAAAGCCCG
GTCAATTTTGTGAGGTTTTGACCGTGTCTCGGCGGACGATGAGAGCGTGTGGAGTACACCGCTTCGGAGGACACGACCGACTTAAACA
GCAAAGTTGACCAATGTTAGTTACAGTTTCTGAAAAAATAACAGACGGTGGATGCCGCTCAATCTCCGGTGTCCATCTCCCTAT
GCTTCAAAGAGCCAGGCTCACCCTCAGCGTCCAGCTGCGGAATGTCGCTGTTGGCCGAAAGGCGACGGGAGCGCAAGATGACTGCGCAC
CGGTCAAACAGGGTGAATCGCTTGAACAACGCACACATGGCTCCAGGCGTCCCTACTATACTATTTCTGACGTACGTAAGGCCAAACGG
TTGGTGTCCACGCACACATGGCTCCAGGCGTCCGTGAGCATGAAAGTGTGAAAAAAGAGAGATCGTTCATGTTTTGCATATATCTGCGCG
ATAAATCCAAGAGAGATCGCTCAAGTTGGCCAGTTGGTGTGGCGGTAGCGACTCAAGCTGGAAGCTGCGCAAGCTAAGCCTTGGATGC
ATGCGGACCCCTTCTTCAAATAAGCTTGTGATCGATGCCAATATGCCATGTACCTAGCAGATTTGGGGTACCCGATCGAACGGCTAGC
TATATCGAGCTCTTGCAGCTACCTAGAGACTAACGTTGGACTAATGGGACGTAATATTTGGAAGCTCTATCCCTAGTGGGAGACCGTGGG
GATCTGGATATG**CACGTG**AGCTGAATCTTTGGCTATAAATATGCATGCGATACACTACTCTTTTCAAGCCACCAAGTCAACCACTCC
AATAAGAAGTGACGGTAGCTAACC**ATG**

Glutathione S-transferase 1 (NCBI accession no. P30110.1; IWGSC accession no. TraesCS3B02G152300.1)

ACCGCGATCTGCTCCTTCTGGGTGGGGTTCGCGGCTGACGTTCTGTTGCGGGTGGGGTTCGCGGCTGGCGTTCTGCTGCGGGTGGGA
GTCGCCGACCGCGTCTGCTGCTAGGACAATCGGTGAGGCCAGTTAGTGCTAGCCGATCGATTGGCGAAGAGATCCGAGTCTGGGGAGA
TCAGTGAGGCCAGGTGCTATTTGGCCATCAATTGGCCAGGTTCTGGGAACGGGGTGGCGTATCAACGAGGTGCTAGGCTGCTAGCTAG
GGAACTGGATCCTGGAACGTGGAGGAGCAAGTCCGGTATGCTAAGTACTTTAACTTTCTTCTCACATCCACCTGATTCAGATTATTTG
ATCTAAATTAACCTGCAAAAAATATATGTGTGATATCCATCTACTATAATTGCTTACAATCAAAATATATATGTGATTTTTTTAGTTTAA
GATTTATATGCACAGTAAATCTGAATGTTCTTCCATGCATGATTTAGTTTAACTTTAAAGAGTTATACTAACTAGTCTTGATAAAGAGATC
TTTTGGAGCAACACCAAACTCGTGAGGTGTTTTGCTACGAAAGGTTGTGCTATGTAATGATTATTATTAGGATCAAAGTTGTAGGATAA
ACGTAACCTTCTCGATGATCTTTTATACAACATTTAGTGTAGTTAGTTATATATGGAGAGAGTATTTAACCTTTGTGTTAAGAGTAGAA
TAAGTTATCCACACTCTAGCCAAACGAACTATTTGGCAAATATCTCGCTAGCTGGTGAGAGCCAGAGCCGTGGAAAGTCTGCTTGTCTATT
AAGGCACAAGCATCAACAGGAACATTTAGAGCCATGGAAAAGTGTATGTCGCCTACCAATGGGCCAACTGCTAGCGATGTAATAATAGCA
TCCAAGTTGATTTTTATAGAACATGCAAGGCGTTGGCAAGTGGGAAATGATGATCGCTGGCAAGCTTAACTCTCGGAACCTATAGCATT
CAACTGAATCAGAACAAAGATTTAAAAAATACATTTCCATCGATAGTGAAAAATTTCAATTGAGTGACAACGAAATCATATTGGAAAT
GTACATTTACTTGTGATTTAAATTAGAGGCATTTTCTACCTTTTTTAGTTAATAAGATATGCATATACCCACCTTAGTGTTCGAGA
CAACGAGAGGCACATTTGCTTTTGGTGTACCATCTCTCAAGCCTCAAAATAGTTGTGCGGACACGATTATCTTCCCGGTTGGAATATC
GTGGCCTGGTAGAGCTAGCGAAAAATCTCCATGTTGGAATATGTCGGCAGCCGGATAGCCGCATGCATGTAAGTCTCTTTTACCTTAC
ACTTGTCAAGTGACACTGTATGTCGCTACCACTTGTCTAAATCAATGGGCCAACTGCTAGCGACGTAATAGTAGCAAGTTGATTTACAGTG
TTTTGCTACAGTCTCTGACTTTGTTTCTTCAATTTAGACTAGCTGACTACTGTCGCTTACCTGCCTTCCCTTCCACGTTAGAGGATCCA
GTTCTGATATTGAGACCTCGACGATGGGAGGAAGGCGCATGCTGTTGGAATAATTTGAATTTCAAAATCTATCTGGGATCATATTGGT
CCTTACCAGTGTGGGGGCTGTCGGAATTTGGTCCGCGATCTACAAAAGTGAATGGAGGGAGTAGTTGTTTCTCAATCCGTACCAAC
GCACTGTTTTCTAACTAGTACTTACTTCTTCCGACCACAATATGGAATAGAGGGAGTATCGATAAATAACAAAGATGATTACTTACCCGG
TTTAAATGATTCAAGAGCTCATTTAAATTTGGCACTCATATTTTATATATCTTTTTTGGTAGAAATGAAATAAAGCAGATCTAGACACTAGC
TAAAAAGTGCATGTAGCTTGTATTTTCTTGGGCCACGCGGGCGGGTGTGGTGTCTCCCTGCTCTGTGTATAAATGGAGATCAACATCCAA
GGCTCTCCACACACACAGCTACAGAGCAGAGCAGAGTCTTGTCTCAGTATCTGCCTCTCTGCTGCTGTAGAGCATCCAT**CAGGT**
GAAGTTCACGGACAAC**ATG**

Peroxidase (NCBI accession no. CAA39486.1; IWGSC accession no. TraesCS2B02G125200.1)

CAACCGATGGGTACTGCTCAAATTTGCCATGAAATCACAGCAGTATAGGTTGCACTGCTTGGCTCTCGTCTAGTATACATGTCATAA
GGGTATTTGGGTAGAAAAAGTTTATGCCGGTCCGCCAGGCGAAGGCCATCTATGGCGGATCAAGAGGCTGCAGAGCTAGGCTCTCTTCT
CGCCATCTATGTTAGTGTACTCTCCAGTCTCTCCCTCCCTCCCT
CAGGACGCCACTACTCCCGAGGACCTGACGTGTTTTCAGGACCGGTTCGCACTCACTCGTACTGCTCTTGGCTCGTCTTCCGCTCCACGG
GTCCCTGCCAGCGTCCCGCGGAGCGTGCACCCGCTACTCCGCGGACCTCCCTCCGGAAGCGCGTGCAGCCTCAACCCGATGGTCAA
ATGAAGCTGCAGGACTCCGAACCCAGTCCAGGAATCTTGACATCCATAGGCTTCCAAGTTCCAACGAAAGCGCTCTCCGCTCAGAGC
CGCCCGTGGGCTGGGAGAGACCATGGCTCCCTTAAATTTTAAACGAAGAATGTCTATCTTACCTCAGAAATTTCAATGGTCAGATTT
TAATATACTGCTCCCTCCCTGTGAGCAGTATAGGGTACTGTAAAACGCACCTTAGAAGAAGCTTAGCTCTCACCTTAGAGTGGTCCAAATG
ACCCCTCTGCTCGATCATTTGCACTTGTATGTTATCGCTATGCCTAGCCTTGTATGATCCATGCGTGGTCACTTGTCTGTAGAGATCAGATAGC
TACTTCAAGGTCGTGAGTTTATCCTTCGGAAGATTAGTCTGTAATAGAACAGGGTTTATGGTAGATCCCATGGTTGTGCTCATGTTGGTTG
CACCATACACGGCTCAGGTTAGCCGATTTGAACCTATTTATATAGAGGAATAAACTCGCAACTTCTTGAAAAATAAGTCTGTTTCAGGAA
TCCAAAATCAACAGCAATTCGTCGGCTTTGTCGAAAAAACAATAAATTCGTCGGAGGCATGGAAGCCAAAGAACTCGCTCCGCTCAGGCTA
CAGATCGGGCCACGTTACGCGCCGCTTAAACGCCGCTCGGTGCTGGCTACGGCTGTGCGGCTCCGTTCCAGCCTCACTATTCCACCGTGC
GTTTGATAAGGCTCAACCGCTCAAGGCAGCCTTACTACCTCCGTTCTTAAAAAGTATACTTTCAACTTCAATGAGGGTCAAACCTACTCAA
AGTTTGACCGAGTTTGTGCAAAAAGTATATCAATGTTTACAAAACCAATAGGTGATGATAAAAAATATATATATCATGAATTTAATACTAC
TAATTTGATGTCATAAATGTTTGTATATTAATATATAAATGCAGTCAAAACATAAAAAATTTGAATTTTCAACAAAGTTGAAGGCACACTCTT
TCAAAAACGAATGGAGTACTCTCAATGTCCAGCTACCGAATTTGCGGTGTTGGCGAAGGCAGCGGAGCGCAAGATGGCTGCGCACCGG
TCAAAACGAGCGTGAATCGCCTTGGAAACAGCCGACTCCCACTACTATTGCGACGTAAAGGCCAAACGGTTGATGTTTCAGGCACACATGGC
TCCAGGCGTTGCTAGCATGGAAGTGGTGAAAAAGAGAGATCGTTCAATGTTTTGCGGATTTTTGCGTGATAAACGCCAAGAGAGATCGCT
CAAGTTGGCCCTGTGCAAGGAAATTCAGGTGTTGGTGTGGCGGTAGCGGCTCAAGCTGGAAGCTGCCAGCAATACGCCAAGCTGGAAGC
TCGAAGTATACCAATCGAACGCGAGTACAGACTAACGTTGGACTAATGGGACCTAAATTTTGGATGAGCTATCGCTAGTCGGAGACTGGA
GCATCTGAAGGT**GCACTG**AGCTAAATCTTTGGCTATAAATATGCATGCGATGCACCACTCTCTTGCAACAGCCACTAAGCCACCACCACA
CCACTCCACCAGTAAGAAGTGCAGCAGGTAGCTAGTAAGCCGGCTAGCTTTGCTCTTGCAGCTAGCTAGCTAAC**CATG**

Probable xyloglucan endotransglucosylase (NCBI accession no. XP_020152513.1; IWGSC accession no. TraesCS7A02G426700.1)

ATGATCAACATAATAAAATTTCCATGCTACCTATAAAAAAATTACAGATGAAAAATTAATAAGCTTGTATTGAAAAATATGGAATATTT
CAGAAAAAATCTCTAAAACAATCAAGGCAACCTTTGGAATTTGTAAATTCGCACATGGCAAAGTTAGAGATTTTTTTGTTGGAAAGATG
GCAAACTTTAAGAATTTATTTAAAAAATAGCATGTTATGGCTGTATATGCTTGGATGCTACGAGGAAAAAATGTTCTGCTTCCATC
TTTGTAAAGATGGTGCATATTAAGTTCAATTTTAAATTTTCTCTATGTCACATAAATTTTGGACCATTTTTTGGACTCAATTTTAGTT
GTTTTGAAACACCTACTCCCTCAGTTCCTAAATATTTGCTTTTTTAAAGATTTCAAATGGATTACCACATAAGGATGTATATAGACATATTT
TAGAGTGTAGATTCACTCATTTTGTCTCCATATGTAGTCACTTGTGAAATCTCTAGAAAGTCAATATTTAAGAACGGAGGAAGTATTTATTA
CACAGTTGTCACAACACTTGGGGCATCATCTAGTTTACTTAAACATGGATATACATAGATCCCTATCTAGTAATGGATAATATTTCCCTAATA
TTTTTAAGGATATGAAATACTTATCTTAA**CAGT**GCTACATGATTTGTTCTCACATTTTTTGTAGTAAGCAAAGTATTTTTGTGATTT
TTCCCTTACATAAAGAAGCAAAATCGAGTAAGCCAAATAAAAAAATAAATAAAGTTACTTCCGATCAAACTATCAGAGTCAATGCCTTCG
TACCTTTGAAGTGAAAAATAAATTTCTGGTTTCAATGGATGCATGACAATCAGTCCATTTATTTCCAAATAGGTGGAACCTAAATTAATG
AACACGTCCTGACCAGAGACGTGGCCCTTGTAGACTTGTATGTCAGCAATTTCTCATCGTTTGTAGTTGTTGAGGAGAAAAATCAAGGCTG
CTAAAACCTAGATGATACCTCATGAGTGTACATAAATCGGTTGCCCTTCAATTTCAATGAGATTTGTTGTACGAAACATAAATATTTGAT
AAAAATGAAAAAGTGAATTTGAATATACATATTTATTTATGATTTATTTCTTGTATATAGTTGTAAGATTTATTTGAATGTAAGTACCAT

CGCACGAAGCGGTACACAGCTGCCGAGGACAAGCTTCTTTGCGAGTGTTCGAGACATTGGACAAGACCCAAAGACGGGCGCCGAGCAAAAAG
CATTTCGACCTTTTGACTCGTGTGCACCOCGAGTTTCATGAGCGCAAGAAGTTTCCACCTTACCAATTTGTGAGCAGCGCGGGTGGGTCTC
CATTTCGAAGCGGTGGAGGGTGTATCCAAAGAGTGCACAAAGTTTGTGCCACCCTTGAGAGCGTCAAGGCCCGTCCCGTGAGCGGCATCG
ACGTGCAAGACATGGTATGATGCAAGCAAGCCGCCCTTTTGTGCCATCAAGATCATCTTTTACGTCTTATTTGTCTACTCATCTGCCCA
TATGCTTGCAAGAAACATTTTGTAGGCATTTCAAGCTTTGGAGGCATTCAGAGTTCAACACAATGGCAAGTGCCTTCAACCTCTCCCATGTC
TATCGGGTCAACAGGACGAAGAGAAGTCAAGACACAATATGCCCGCTTAAAG**CACGTG**GGGGAAGGGCGCCGTGGAGGATGTTGGGGAG
GGCGAGTCGGCAGCGCCGGGGGAAGACCAACTCCAAGAAGGAGGACAAGCGAGATGCGACCACCAACCTTGATCGCAAGCGTGGACGG
CATGATGAATAAGAAGGACTCAAGGGAGGCGGAGCGCCGGCTTCAAGGGCGAGCAAAATGGATGCTTTCATGGAGATCCAAAGGAGGAGGC
TTGATCTTGACGCCGAGAAGCAAGCCAAAGTGTAGAGATCGAGGCCCAACGCCAAAGCAAGACAAAGACGAAAGAAGTGGCTCTTGAAGCATG
ATGACCGGGGTGGAGATCATGAAGTGAATCTCAACGCCCTTGTCAACAAGGAAGAGGCCGTGGTTCGAGAAGATGTAGGCCGACATGCTCAA
GTTCGATGACGAGTGTATGATGGCGTGCAGGGCCATCTTTTGTATGCCGGTAGGTGTGCCGGCATGACCACGGGAGCCCGATGGCGTGGT
CGAACTCAAGTCCACTATTTTTTGTGTGCTGGCATGTGTGCCGGCGCTGGCGAGTGCACCAGCATGAACTGTGGTATTTTCTGAAGCCG
GCATTGTATGCCGGCGTGGCATGATGCTGTATGAGACATGGCCGTGGCATGATCGACAGCGGGCTTTTTTTATTTAAAAATGAATACG
GACATGAAATGAGTCGGCCGATTTGGGCGCATTGCCGATTCAAATACAAAACCTGAGCGGACGCCGGACGTGCGGCCACTCAAACGGACAAAAG
AAAAACAAAATGCGTCTGTTGAGTCGCCCCATTGGAGTGTCTTACCOCGCAATCCCATTCTTATTCGATCGGCATCTCCTGCGTAC
GGAAGAGGGCAT**CACGTG**TGCCGGTGTGCGTGCAGCCTCAAGGTGCAAACTCTCCTTCGTAAGCAAGCGGCAGTACACCGGGTCCA
AGAGCTCATGGCTCATGGCAGCGCCACCGACCCACTGGCCAGCGCCATCGTCTCCATCGGATATTCGAGGCTCCCGGTCATGCTCAT
GGGGCGTACGTGCGCCCGTGGGCACCGCCATGCAGAGACAAGCCTCCCCTGCGACGAGCAGGCCAAGACACAGGGCTCGTGGCAGTGGG
CGCGCACGGAATCAACGCACCTGGCGTGCCTGGGCCGCTCCATTGGCCGGGGCCGAGACTGAGATCACGAGCTGCCGACGGCGCACGCT
GCAGTGCAGTGTAGTGTATCGTGTGGTCCGGTCCGGAGTGGAGAGCATGGCCACCCGCAATGCGTCCAGTGCGAATCCTCACGGGCG
CGCCATTGGCCACGGCAGGGCGCTGGCCGTGTATGTAGTGTAGCTTCCCGCGCTCACGGCT**CACGTG**CCCCGCTGCCCGCTCGCGCTATA
TATCCACCGTGTGACGCTGCGCGTTACGACCTCACCGCCACGCTTCAAGGCTAGTGTAGCTCGATCGGTACGGTGAATA**ATG**

Non-specific lipid-transfer protein 4.1-like (NCBI accession no. XP_020197700.1; IWGSC accession

TraesCSU02G057300.1)

TCGTTTCGATCAAGACAAC TAGCCTCTGTCGACGCTGGCTGGCCATCTTATGTCGCCCTGTTAAAAAATCGTGCTTGTAAAGACTTTCTGAA
TCTCAGAAATCCGATGTGTTTTACTGGCACGTTCTTTTCCAGGGTCACTGATTGCTGTGCCCTTCTGTAATGTAGAATCCCTAAAAAA
ATTCAGTCCATATAGTCGAGGCTCTGCAAAATAGCACAAAGACACCCGACTAAAATGGCTCACACTATGCATAGTCAACCCGTTGCTCCTG
TGTTTCGACCCACGGGCGGCACTGTATTCACCCCTAATTTTTCGAAATAAACGACACTGACATGTGGTCTGGGATGCCGACCATCA
TTATATTCACCTATTTTTCCCTAATAAATATGCTGACAGGTGGCTCCCGGGTGTCCATGCATCACTATATGCGCCAGGTAACGGTCAACTA
TGTTGACCGGACAGAAACGCTCGGTTCCGGCATTTTTGAGTGTGCGGGGAGGTGGAGAAAAGTGAAGGATGTTAGTTGTGGGGCAAACTG
AGGAGTACTAAGCAACCAAGGTATAGGAATAGAAAATAGAAAATCCCTTTTTTATTCATTACCTTTTTGTTTCCAATTTGTCTATTTTACA
TCCCATCGCTGCACCTCTGGACCTCTTCCATGGTGGCATCGTATAATAGATTGAGATCCTACATCAGTGGCACATAATGAGATGAGTCTT
CTGTGTTACACCTCTCAAAATCCATCCATATTTGGCATGAGTTTGTAGTATATATACACAAAAATCAACACATATATACCCACTTTTAGTA
TTTCAGCACATATATAC**CACGTG**CGATGGAATAAAAAATGGTATTTATTTTTTGAAGTAGATAAACAATAAGCTTGAAGTATGACACCAAA
CAATTTCCAATTACAATCATGGATGAGTAGCTCTAAGTGAACCTCTTAGAGAAACATTGACATATTTCTTTCTTTTTCAATTACAA
GACAAAACAGAGGACACATTTTTCTCTAATTTCTTTTCAATCAAGCTACTTGTGCAATTCCTACATAGAAATGATCAAGTGAAGGCGACTA
TATAATAAGATCACAAAATCAAAAGCAAAAATATGAGTTCACAAAACAAGATCAACACATTTAAACAACATCATG**CACGTG**TTAAGGGGA
GAGGATTTGGGTCGAGGTTGGCGGTTGCTTCCCGTATGCGGATATGCCGTACTCAGGTATGGGTATGGCTTCCCATCCCGTACCCGCGC
TTACCCACTCGGTACAATTTCTCCATTTATATACCCATGGGTATATATTTTCTCAAAACCTTACCCTAATAGGGTTTTTACCGTCCGGT
TTGCGGGTTGCGGGCACCCATTGCCATGTTGAGGCATGACACATGTGGTTCGAGAAAACATAGGCCTTATGGTAGTGGCACAAATCCACCCGT
ATTCGCCTCACCATGAGTATCAGGATCTGTTCCGCAAGGCCGTTTGC AAAATATAGTTGATGTTTTACTTAGTCAAATGACATATATAA
TAGTTCATTTACTTGAAGACACGCCCTCCGTCCCATAATATAAAATCGTTTTTCAAGCTATGTTAGCTTGAAGAACGATCTTATATT
ATGGGACAAGAGATTTTCATAGAACTAATCGATATTCAAAATATACGTTTGAAGACGACATCGATGAGTATCAAACCGTACATTTGGC
ACATTTGCGAATTTAATCTTGAGACAGAATGAGTAAAGTCAATTTAAGTACAGCCCTATAAGATCACATGCACCGTACAGTTTATGTAGTTC
ATGGTTGAGCTCACTGTCACTCAATGCACTCAACTACACTACTCCAGCAGAGACTGAGATTAGGTAAACCTCTTAGTCCCGTCAATTAATCTG
CTGTGCACACGCTAGGTCCATCCATGGGGCCAACTCAACATCCAGCAAAATGCATTAAACGACCATCG**ATG**

Non-specific lipid-transfer protein 3-like isoform X1 (NCBI accession no. XP_020151640.1; IWGSC accession

TraesCS2A02G47700.1)

TATATAAAGGATGGAGGGAAGGTGGCCGGCCCTCATAGTGCGCCCAAGTGTGGAGTCTACTAGGACTCCCTACTCCTAGTAGGATT
CCACCTCCACATGAAATAGGAAAAAGGAAAGGAAAAAGGAAAGGAAGGAAGCAAGCTAGTCCAAATTCGACACAGTCCATGGGGAAGGGACATG
GCCACCTTGGAGCCTTTCTCTCTTTCCCGTATGTCCTAATAGGCCCAATACGAATTCCCGTAACCTTCCGGTACTCCGAAAAATACCCG
AATCACTCAGAACCTTCCGATGTCGAATATAGCCTTCCAATATATCGATCTTTATGCTCGACATTCGAGACTCCTCGTCAATGTCCTCC
GATCCCATCCGGGACTCTGAACAACTTCGTTTCATCAAAATCACATAACTCTTAATACAAATCGTCACAGAACGTTAAGCGTGGGACCCCTAC
GGGTCGAGAATATGTAGACATGACCGAGACACATCTCCGGTCAATAACCAATAGCGGAACATGGATGCTCATATTTGGCTTCCACATATT
TTATGAAGATCTTTATCTGTCAAACCGCATAACAACATATGTTGTTCCCTTTGTCATCGGTATGTTACTTGGCCGAGATGACAGTCACTAT
CTCAATCTAGTCAATCTCTTACCAGAAAGTCTTTACTCGTTCCCTAATGCAACATCCCGTAACCTCATTTAGTACATTTGCTTGGT
CAAGGCTTATAGTGTATGTCATTACCAGAGGGCCAGAGATACCGCTCCAATATACGGAGTGACAAATCTAATCTTGATCTATGCCAACT
CAACAAACACCATCGGAGACACCTGTAGAGCATCTTTATAATCACCCAGTTATGTTGATGTTTGTATGACACACAAGGTGTTCCCTCCGGTA
TTCCGGGAGTTGCATAATCTCATAGTCAGAGGAACATGTATAAGTTATGAAGAAAGCAGTAGCAATAAACTGAACGATCATTTATGCTAAGCT
AACGGATGGGCTTTATCCATCACATCATTTCTAATGATATGATCCCGTTCATCAAAATGACAACACATGTCATGGCTAGAAAACTTAACCA
CTTTGATTAAAGCTAGTCAAGTAGAGGCATACTAGGGACACTCCCATTTGCTATGTATTACACATGTACTAAGTACCAGGTTAATACAA
ATTCATGATGAATAAATAAATTTATCATGATATAAGGAAATATAAATAACAACCTTATATTATGCTTTAGGGCATATTTCTTCAAGGCA
TCACAACAATAATACATCAGTGCACCGAC**CACGTG**AGTTCGATCACTTCGGTTTGAAGCAACATATATCAAACTAGTGTGTAACACTCTGAA
ATTTTAAACCTTATTTAAGTGAGAAGATAACAACACTATACAAAGTTACAATTTCCAGGCACAATTTATGATGATAATATAAATAAAA
GAAAACAGAAATTAACACGAGGATATATGCTTGATATACACTCCACTTGGTTGGAGTTAAGAAAGCACCGCACATGTTGCTGGCATTGA

TCACCGCACCCTGATCAGTACATATGCCGGTGGAAATTAATACTTGACTAGTCATAGATCCTAACTTTGCTTTCAACGATGCATGGCATG
GTAGATGCATAGATCGGTGCTACTCAAATTTACTCCATATCGTGTCCATGTCGCCCTCTTTTGTGTTTGACAACGACGGCCACCTACT
CACCCTGGCCATTCTCCAGATCTGCACACTACACTGTGGACTGTGGTAGCTCGCACACAGGTTCCATACGTTTACACCGGAAGAAATTC
CGTCGGAATTTTGCAGAAGCTTCTGCTCATACTAATGTAGTAGATGTGAGCACTTTTCGAAAGTAAAAATGTAGATGTGAACAAAGAAGC
GTACATGCGTGCAGTGCACCGATCGATCCATGATCCATCGTACGGTCCCCAGCGCCCAACCACCGGCATG

Type 1 non specific lipid transfer protein precursor (NCBI accession no. CAH69190.1; IWGSC accession
TraesCS2B02G501000.1)

GTAGAAAAATCAGGGATTAATAGAATTAATAAATCATAACAGTATGCGTGTCTAGCATACAAGTTAGCAGCGTCTGTGTTTACTCAA
CACTGCTAGTACAGATATATTAATTTGCTTTATATAGCAGAACAACCTCATATAAGTTACACGATTGGAGATGTAACGTGCAAACTGTG
TACATTACATGCATGTATCCAAATTTATGTGCACAAAAATAACAACATTAACATGTCTCATTCACACCGGAAACCTTTATGTAACACTTTG
AAATTTTAACTCTTATTCAAGTGGGCACATAATGATACCATACAAAGTTTCAATTTTCTAAACATCGTTTAAATTTGTAAAAATTCAAAA
CTATTTAAAAACATGATGTGCTTGAATAATCCCGTACAAATATTTCAGATTTTTTATTAATTTTCATCAACACGACTAAATATACAATATAAA
ACTTTTATAGCATAAACTTGGAAACGCAAAAAATCCATAATTTGTGCTTAAAAATCTAAATGTAAAAATATACTAGCGCGCTCACGTCCAAGCT
CAAGTTGCTAGTAGAAGCACTAGCAGCGCGCTGACGAGTAGGGACGCTTCTAATGACCATTGATGTAACATTTTTAATATTCCAAACAAAA
TTCATATAGTTGATGTGCTTAAATTTTCAATTACTTTTCATCGAAAAACAATAAATGTATGTTAATTTTTTTGGCATATAAAGCCCCATAA
TCATGTTTGAATTTATGAATGCTAGCATGTGCACACTACTAGAAATACAAGCTAACGTCGTCTGCGTTTACTCAAATGCTGCGAAATACA
TACATTAATTTCTTTAAAAATAGCAGAACAACCTCACATGAATCTCAAGATTGGAGATGTAACGTGTAATTTGTGTACATTACATGTATA
ATGTTTTAAGTCATGAAATAACAGCACTGCTATGTCTCTCAACACGACAGTTTCCCCATCGAAACGAATCTCCCATGGATATCGATC
CCTTCGTTTGGAAACACATATATCAAACTAGCGAGTAACACACTGAAATTTTAACTTATTTAAGTATCATATAACACACTATGC
AAAGTTACAATTTTCCAGGCACAACCTATGCTTGGCAATAATAAAGAAAAATAGAATTAACACTACGGCAGGAGTATATGCTTGATATA
GACTCCACTTGGTTGGATTAGAAGCACCACACATGTGCTGGCATGATCACCGCACCGCCTGATCAGTACATATGCGCGTGGAAATTA
ATACTACTGTTTGTCTTTAAGCATGCATGGCATGGCAGAGGATAGATCGGAATACTACTGTTTTGCTTTTAAACGATGCATGGCATGGTGG
AAGGATAGATCGGTCGACTCAAATTTACTCCATATCGTGTCCATGTCGCTCCCTTTTTTGTGTTTGACAACGACGTTCTACCTACTCAC
CACTGGCCCTTCTCCAGATCTGCACACTACACTGTGGACTGTGGTGTCTCGCACACAGGTTCCATACGTTTACACGCGAAGAAATCACGT
CGGAATTTTGCAGAAGCTTCTGCTCATACTAATGTAGTAGATGTGAACACTTTTTGAAAAACAATATATGTAGATGTGAACAAAGAAGCG
TCACATGCGTGCAGTGGAGTGGACGCGCGGAGCGATCCATGATCCATCGTACGGTCCCCAGCGCCCAACCACCGGCATGCGCATGCATGCA
TGCCCCACTGGCTACGTACGACGTACCGCATGGACACCTGATGATGATGATGATGATGATGATGATGATGATGATGATGATGATGATGATGAT
CTTCTTCTGGCCATCTCTCGCCCGCCGGCTATTTATACCAGCTCCACGGAGTTCCAATCCAATCTCCACAAGCGCCATCACACACAAGCT
AATCAAGGCTCAGTCTCTCCGAGCTCCACGATTTCCAGCAAGCAAGCGGAGCACTAGATCTCGATG

Short-chain dehydrogenase TIC 32 (NCBI accession no. XP_020201268.1; IWGSC accession
TraesCS3D02G077500.2)

TTGCATATGGAAGCTCCACGGAGAATTTGTTGATGTGGTGTCAATGAGAAATGACACCTAGCTTGTGGATCATCGGATACGGGCCCTCT
TCGATTCAAATAACTTTTCAAGGTTTTTTTTGAGAATTTTCATCCTTAAAGAAAAAATACATGTCGGTAGTTTAAATATATGATCATAAGG
TACAGGAGATTTTTGTGCTATTTGCTAGATTTCAAGGAAAATTTTCATCCACTCTGGCATGTTGAGAAATCGTATGTTTCCCTTATCCCGT
GTGTTAAATCTGTTTAAACATGAAGCGACATGATCGCACATGACCTGTGCTGGTCCCTCTTTTTTGTAGTACAACTACATTTGATTACC
CATTTTGCAGTACTCCTAATACGTTTCGATTTGTGGCATGTTTGTGATTCAAAGGAATAGTGCATGATATTTGAAGAATTTGAATCCATGGGAA
TTATTCATGTGGATCGTTTATTATAGAAACGGAATTTTCATGACCTATTTGGATTGAAGAACTTTATAATTTTCTTAGAGGATTTTCAT
TTCATGCGAATCTTCCATATTAACCAATTTGAATCATAGGATCCTGGCCACTTAAATGCTTATGGAATCATTTGACCTGATGATGATGAT
TTGGATCATAGGAATTTCCCTAACTCCCTAAGGAATCATATTTACTCTATTTTGGAGAAAAGTTTCCATCCACTTAGGACCCATCTGGTTT
ACATGATTTTTGGAACATGCAAGCATGCGTGTTCAGTCAATAGCACAACCTAGCTTCGTCATGAGGCAAGGGAGGTGAAGAACAATGCAAA
TCCTTGATATGAGAATGGTATGTTGGTAGTGCTTTTTCTTTGATTAATAAGATATATAACATGGGATGTGTCATGCACGCTGCCATATT
CATTTGTGTCAGAAGATCATATCTAGTTTGTGCTCACCTACTCTCATTTCAAAGACAGGAAGGAGAGAATATATAAGCCTTTATGCAATTA
TTTGTCCATCTCTTCTCACATATATACTAGAGATGGCGACAGTGCAAACTAACAATATAGTTAGAAAGTTACAACCGCAACGACTTT
CTCATGCGAATCTTCAAGAGAAACCAATACCTTCTACATAGTTGGTCTGAGTCTAGAAATAATTTATGGGAATGAGTGGCAGCGCAACCTCT
ATTTGGATGCCCTACATGTTAGGGCACCATCTCCAACCTCATGCAATCCATGATCAATTCGCCACATAAGCAAAGCACACACAGTAATAT
GTGTGCCACCTTATTGCCATGGAGATAGTGTGCACCATCTAGTCTTTCAGTGTGGTGGGTTGGCGCTTCCATCAAGAAAGCCCTGGAGGC
AGTTCAACGCATACATTTGTGATCCCTCTATGTCTCGCAGCGACATTTTCAGCAATCACTATTAGACAGAGCGCACGCAACATGTCTCTGC
ATCCTATGATTTCTACGCGAGAACAGTATATCTAGTTCGCAAGATGCAACTACATCAGTAGATCAACACCGTTGACCGTAGCTGTTGAG
AGGCAACACAGTACACTATCTTACACCAACAATCCTTTGATTTTTGAGAGAGCTCGATCCCTGACTTTTATTTCCCGATTATTTGTAAC
TACTCCCTCCGTTCCATAAATGTAAGCTTTTGTAGAGATTCTACTAGATGGACTACATACGGAGCAAAATGGATGAACTCTACTTAAACCGC
ATCTATATACATCCGATGTGGTTCATAGTGAATCTCTGCAAGACTTATATTTAGGAACGGAGGGAGTATATGTCAACTATCTGAGAATA
GAGTCTTATTATGTCAAAGCAAAAATGCAGCAGTTGATCAACACCTGACTGTGACTCTTCTCCTCTGGATTTTCAGATTTCTCTCTAGG
AAAAGAAGATGCGATTTTTTGTCCAGTGCAGAGACCAACACATGCATATTTCTTCCCGTGAAGAAAGGAATCCAGAGAGGAAACCTGT
TCCATCGGAATAGTAGAGTCCCGCCCGCCGGATTCACTCGAGAGTTTGGCTTCCGGCCGGTAGCCTGCCCCGACCGCCTACTCCCCAACCA
AACTGCTGCTACCGCTCCCGCGGCCATAAATAACCTCCTCCCTGCGCCGCTCCTGACCGCCTGCCTCCTCCCTCCTCCTCCTCCTCCT
CGCGATCACCGGAACCAATCTCGCCATCGCCTAATCCGTCAGGTCGCTCAGGTTGAGTTTCGCCAAGATTTCTGCTTCTTCTCCTTCTT
CTTCTTCTGATTTGGGGCTCACATTTCTGTTCCGAGTTTTCAGGAGTTCGCCCAAGAACAAGATG

Type 1 non specific lipid transfer protein precursor (NCBI accession no. CAH69206.1; IWGSC accession
TraesCS3B02G063500.1)

TGGAGATGCTCTAATGACGCATCCATCGGTAGTAGTAAATCATCATGAGACATGCTGCTACATTGACGGATGAGGCACTTACCATTAATAAA
AAGCCGAGTGGACTATGGCACTGAATACTTGCACAGAGGCAAAATTAACATCTATTCACTCCAGGTGAACCAAGGGGACAGTGCATTTGGTG
CTGAATTACAAGTCTCCCAAGTGCACATTTTTGCTCTGTGGTAAATTTAGAATGTGATTTTGTAAAACAACCTGAAAAATATATTAACATAAGAAT
ATATTTATATATGCATTTAGATCAAATATCGTCCGTTTTGTACCAACTTAGTTCATTGATATATTACTAGAGTTAACGTTGAACGATCAAA

TTTCGTTTCTGAAGGTGGTGCACACAT**CACGTG**AACGAAAAAGACAGGCAAGGGTATCTTGTGAGGAAACAAGAGATAGTGTTCCTTTGTT
TTCTCTTAGAACAAGACTGGCAATGGCGTTCCCCAATAAATTTGTAACAACAAGAACAACAACAATAATAATGACTATAATAGTAAC
GACGACCAAGAAGATGATGGACATAAAGGTCTTAACATGAACATGTGTCCCTTTTGTGTTTTGAGTTGCTAGAAATCGTGAGATCACCTTCGG
ATAAAACATGCATGATGTACAAATAAAAATTCGAAATGTAGCTCTGAATATGGTACCAATGAATGTTAAGCTGTGATATTGGGACCAATAA
GGCAAGGTAGATGATCCCCAGGCATGCATGACCACATGCACAACCTAGATTGATATAGTTCACTTGTTCGAGCTCACCATAAATTAATGCACTCA
ACTACCGAAATCACTGATTAAGAGTACTCTTTGTAATGTCACTCACACCTTCCCATAGTGCAACATGTGTTGAACTGCATGTGCGCCACT
TGTCCGAACCTGGGATTTTTCCCTTTTCGTAGATTTTTAATCAAAAATGTTTTATCTCTCAACCATGTGTCCAAACTACTGAACCATTCACC
ATTGGATTCCTCGCGTCGAGATCTTCAAACTAGATCGTATGTTGATAGGTTTCGACGAACTTTTTTTCACGAAAAAATCGAACGAAAAAAA
CCCGAACCGAGAGCACGGTTTTCCCTTTCCAAGAGCATGACCAAGCTTCTCGCGGAAGCAAAATCCGCACCTCCACGAGAACTAAATTAGTGC
CTCTCGTGAAGGAAAAGAACAATTTTTGTCTTTTTCTGAGAGGCACGGCCGTTCTTGTGCTGGAAGCAAAATCCGTCCTCCACGAGAAGTA
AATTAGTGCCTCTCATGGTCGAAAAATCCAAGATTTTTCCCTCTCGCATAAGCAAATTTTGACTCCACGAGAAGTAAATCAGTACCTCTT
GTGGATGAAAAAACATTTTTTCCCTTTCCAAGATGCACGGCTGTGCTTCTATTGGAAGCAAAATCCGGTTTTCCGCTTTGAGCTGAGCTA
TTGGATTCCGTAGGCCAGAGCGTATTTTGGGTA AAAATGATGATGTACGTATATGCACAGTTCAATGGTCGTGCTCACCATCATAGATGCAC
TCAACTACTCCATGGTCGCGCACTATATGACTGCGTACATGTCTTAGTCTCATAGTTAATCTGCTGTGTACACGCTAATCAACCACATTC
CCGCTAGAACGCTGGATGATGTGCTTGGTCCATCCATCGGCCAACCAACGGTAAACAACCAACCATCTCCTAAATGCATTAACACCATA
AATCAATTC AACATCCAACAACCTAAATTCATGCATTTGCTCGCATCAATTGAATTGGCACACGTAGACACAATACTTGACACCAAGAAAG
TACTACTGTTTATCCGAATGGAATCCCGTGATGGTAAGAAGCCCTATTTAAGCCCATGCATCCCCACGAAACTCCTCACCATTAACAATCACT
TAGCAAATCTAGCTATCCCATCATCTCTGCCTGAGCTCACTACCCTACTATTGCTAGCTTGATCGAG**ATG**

Supplemental Figure S5. The promoter sequences of the genes encoding the identified proteins with known functions. These promoter sequences (about 2,000 bp) have been retrieved from IWGSC database. The ABA-responsive elements (ACGT) in each promoter are labeled with red color, and the start codon (ATG) of each gene is highlighted with black bold words. Accessions of proteins in NCBI and IWGSC databases are listed. Promoter sequences of the genes encoding dehydrin DHN 3, putative chlorophyll a-b binding protein 1C, and insulin-degrading enzyme have not been found in these two databases.