

Additional file 1: The nucleotide and protein sequence information of all 53 *SIGRAS* genes. The amino acid sequence of GRAS domain of each protein was indicated in *red*.

SIGRAS1

Solyc11g012510.1.1

Nucleotide sequence (ORF):

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ATGCAAACATCTCAGAGAACACAAATGTCTGGAAGTGTTACGGATTGTACAATCAGCAAATGCAGCAAG
TTGAGCAGTATTACGCCCTTACGATGTTCTTAAGAACAGCTGTAAGGATAATCGTAGCTCAGGGATGCA
ATTCTCTTTACAGGCACAAGACGAACAATTCTTACGCTGGACTCGTCACCAGCTACCGACTATGTTGTCA
ACGATTCACCTCCTGCCTTGAGTGTCTTCCAACAGGAGTCCCTTTTCTCCTCAATGTTACAGTCATACAT
GTCTGATCTGCATCACTCCTCTGATAACACGTGTGGTTCGCCTTTGAGTGGGTGTTCAGGAATTGATGATG
GTGACTTGAGACATGTGCTTCGGGAGCTGGAGAATAAATACTGGGGCTGAATCTGATACTGACGACA
GCTGCAGTTGCTCCTTGAACGATATGGTCTCAAACCGTCTTCTGTTACAAGGTGGAACCGAGTGTGGAC
ATGGCCCTGGCTTGAACCTTGAAGAGTTGCTCGATGCCTGTGCTGAAGCAGTGTGATGCTGATATCT
CTACTGCTGAAGCTCTTATGAGTGCTTTAGAGCAACGGGTGTCTGTGTCTGGGAACCGATGGAACGATT
GGGTGCATACGTGTTGGAAGGGATTAGAGCAGACTACTATCGTCAGGAAGCATCATATATAAAAAATTG
AAGTGCAAAGAACCAACTGGCTTGAAGTATTGTCTTACATGCAAGTCATCTTAAACATGTGTCCATACTA
CAAATTTGCTTATATGTCTGCGAATGTCGTCATTAATGAAGCCATGATGAATGAAAAAGAAATCCATATCA
TTGATTTTACAGATTGCACAGGGAAGTCAGTGGATGTTCTCCTCCACTATCTTGCTCATCGTCTGGTGGAC
CCCCATTTGTCCGCATCACAGGTGTTGATGACGACGAATCAGCTTATGCTCGGGGTGGAGGACTTCAGCT
AGTAGGCAAAGGCTAGCAGAAGTTGCCAAATCATGTGGAGTGCCTTTTGAATTCATGGTGTGCTGACTA
TCAGGCTGTGAGGTCCAACCTAGAGAACCTTCGGGTTAAACATGGAGAAGCTCTGGCAGTAAACTCCCTT
ATATGCTGCACCACATGCCAGACGAGAGTGTAAGTACTATCAATCATCGTGACCGCTTATTAAGACTAGTT
AAGAGTTTATCCCCAAAATTGTGACCTTAGTTGAACAAGAATCAAACACCAACACCGCCCCTTTCCTTCCA
AGGTTCCGTGAAACTCTTGATTACTATACAGCAATGTTTGAATCAATTGATGCAGCTCGTCTAGGGATGA
CAAGGAGAGGATCAGTGCAGAGGAGCATTGTGTGGCAGAGATGTTGTGAACATAATAGCATGTGAGG
GAGCTGACAGAGTGGAAAGACATGAACTTTTCGAAAATGGAGGTTAAGACTTATGATGGCTGGATTTA
CTCAATGTCAATTGAGTCCATCAGTTGGTGAGACCATAAAGCACATGTTGAAAGAGTACAGCCCTAATTAT
CGGTATGCAGAAGGCGAAGGAGCACTCTATCTTGATGGAAAAATAGAGCTTTAGCAACTTCTCTGCCT
GGAGATGA
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Amino acid sequence:

```
MQTSQRTQMSGVHGLYNQQMQQVEQYYAPYDVLKNSCKDNRSSGMQFSLQAQDEQFFTLDSPPATDYVV
NDSPPALSVSSNRSPFSPQCSQSYMSDLHSSDNTCGSPLSGCSGIDGDLRHVLELENKLLGPESDTHDSCS
CSLNDMVSKPSSVTRWNRVLDMAPGLNLKELLDACAEAVSDADISTAEALMSALEQRVSVSGEPMERLGAYVL
EGIRARLLSSGSIIYKCLKCKEPTGLELLSYMQVIFNMCPYYKFAYMSANVVINEAMMNENRIHIIDFQIAQGSQ
WMFLLHYLAHRPGGPPFVRITGVDDDESAYARGGLQLVGRKLAEVAKSCGVPFEFHGAALSGCEVQLENLKV
KHGEALAVNFPYMLHHMPDESVTINHRDRLRLVLSLSPKIVLVEQESNTNTAPFLPRFRETLDYYTAMFESID
AARPRDDKERISAEHCVARDVVNIACEGADRVERHELFGKWRLRLMMAGFTQCQLSPSVGETIKHMLKEYS
PNYRYAEGEGALYLGWKNRALATSSAWR-
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SIGRAS2

Solyc07g063940.1.1

Nucleotide sequence (ORF):

ATGGAATCACACAATCTGTATGGATATGGTGC GACTGATGTGAATTTGCCATATTCTTACTCTATGACTACT  
ACCCCTTCGATACCTAATAGGCTGTTGGGAATATTGAAATTTGATTCGGGAAATTCTCCGAATTCTCCATT  
GCAAACATAAATGATCCTGGTACCCTACCACATTAAGTGATAGCCTGGAGCAACACAGCTCTACTGAAAA  
TATTTCAAGGACTAGTCCTTG CAGTAATTCCTCGCGGGATTATAATCATTATTTCTGTAGGCCTAGTCCCTC  
TCCAGATATCCACCATAACAATCTTCTGGTTTATTCTGGTGATAATCTTTACTCCAGTATGCAAATCACAG  
TCACAACATGAAACATGCGCTGCTCAATTAGAGACCGCTTTAATGGGGCCAGAAGAAGTCACAACATCC  
AGCCCCTCTGCAGGGGAAATTCAGCAGCCACAAGCATCAGGTGGT CAGAGGTCCGGTATGTGGCACCAA  
GATGGCCAGGTTCCATATCGAATTGAAACACAGCCATCATATGTTTCTGTTTTGGCATATCAGGGGATAT  
AATTCAAAGTGAGGAGCATCACAACCGATGGTGGATTATCCGTCGCAGGGGATTCTTTTGGCAACCTA  
AAGGAGCTGCTTATCGCGTGTGCCAGAGCTTTGCTGAGAACAACTTGGATGATTTTAAAAATTGATTG  
CCAAGGCAAGAAGTGCTGTGTCCATTACTGGTGATCCAATCCAGCGTCTCGGTGCTTACATCGTAGAAGG  
GCTAGTAGCAAGAAAAGAAGCATCCGGAACCAACATATACAGGGCTCTCAGATGTAAGGAACCAAGCAGG  
CTGGGACTTGCTTTCCTACATGCATATCTTATATGAGATATGCCCTTATCTAAAGTTCGGTTACATGGCTGC  
AAATGGTGCAATAGCAGATGCGTGTAGAAATGAAAATCGCATTACATTATAGACTTCCAAATTGCACAA  
GGGACTCAATGGCTGACTCTTCTTCAAGCTCTTGC GGCCAGGCCAAGCGGTGCACCTTATGTACGTATTAC  
AGGTATTGATGATCCAGTTTCAAATACGCCCGAGGAGATGGATTGGCCGTAGTGGGAAAAAAGCTCGC  
AGCAATTTCTGAGAAATTCAACATTCTGTTGAGTTTCATGCTGTACCAGTTTTTGTCTCTGAAGTCACCAG  
GGACATGCTTGATGTGAGGCCTGGT GAGGCTCTGGCAGTAACTTCCCTTTGACACTTACCACACACCTG  
ATGAGAGCGTTGACGTGACTAATCCAAGGGATGAGCTTCTAAGGATGGTGAAGTCATTTTCTCCAAAGGT  
GGTCACGTTGGTGGAACAAGAATCAAACACAAACACCGCCCTTTTCCCTCGATTTCAGAAGCTCTAG  
ACTACTATTCTGCAATGTTGAGTCCATAGATGTGACATTAGAAAGGGACAGGAAGGAAAGAATCAACGT  
GGAGCAGCATTGTTTGGCAAGGGATATAGTTAACGTCATAGCATGTGAGGGCATGGAAGAGTGGAACG  
CCACGAGCTATTAGGGAAATGGA AATTGAGGTT CACAATGGCAGGGTTCACCAGTATCCTCTGAGCTCT  
TACGTGAATTCAGTGATAAAGAGCCTCATGAGGTGCTACTCAGAACATTATACACTGGTGGAGAAAGATG  
GAGCTATGTTGTTGGGATGGAAAAAGAGGAACCTAATCTCTGCATCAGCTTGGCACTGA

Amino acid sequence:

MESHNLYGYGATDVNLPYSYSMTTTPSIPNRLLGILKFD SGNSPNSPFANYNDPGTPTLSDSLEQHSSTENISGT  
SPCSNSSRDYNHYFCRPSPPDIHNNLLVYSGDNSLLQYANHSHNMK HALLQLETALMGPEEVTSSPSAGEI  
QQPQASGGQRSGMWHQDQGVPIYRIETQPSHVSVFGISGDIIQSEHHKPMVDYPSQGIPFGN **LKELLIACAR**  
**ALAENNLDDFEKLIAKARSAVSITGDP IQLRGAYIVEGLVARKEASGTNIYRALRCKEPAGWDLLSYMHILYEICPY**  
**LKFGYMAANGAIADACRNENRIHIIDFQIAQGTQWLTLLQALARP SGAPYVRITGIDDPVSKYARGDGLAVVG**  
**KKLA AISEKFNIPVEFHAVPVFAPEVTRDMLDVRPGEALAVNFPLTLHHTPDESVDVTNPRDELLRMVKSFS PKV**  
**VTLVEQESNTNTAPFFPRFQEALDY SAMFESIDVTLERDRKERINVEQHCLARDIVNVIACEGMER VERHELLG**  
**KWKLRFTMAGFHQYPLSSYVNSVIKSLMRCYSEHYTLVEKDGAMLLGWKKRN LISASAWH-**

SIGRAS3

Solyc12g005340.1.1

Nucleotide sequence (ORF):

ATGGACTCGCACCATTTGGTTGCTTATGGTGTGACCGGTAGTGATTTGTCG TATTCTTCATGCCCTACTGTT

AGTCCTCTAGAGAATAGACCATTTGGTACATCGAAATTTGATTCAGGAAATTCGCCACTTGTGAACTATTT  
TAACTCTGAGACCTTCAACACAGTAAGTGATTACCAGGAGCAGCCCAGCTGTACAGAGAATCTTTCAGGT  
GCTAGTTCTTCAAGTGGTTCCTCACTGGATTATAACCAATATTTCCATCGACCAAGCCCTCGGAAGATCAT  
CTTCCAGAAGCTCCTTACAGTCGGAACATGAAACATACTCTGCTGCAGTTGGAGTCTGCTTTAATGGGGCC  
AGACAAAGAGGCAATGAAATCCAGCCCTTATCTTGGTAAAAATATGGGGGCACAAACATCAGGTCAGAG  
GTATAAAGCGTGGAACAAGGAAGCCCAAGTTGTGCGTCATCAACAATCAGTAGTTTCAATCCTTAATGGA  
ATTCAAAGTGATAAGCGAGACAATGTAATGGAGGACTTGCCCTTGAGGGTGTCCGTCTAGCAATCTGA  
AGCAGCTGCTTATAGCATGCGCCAGAGCTTGTGCTGAAAACAAGCTAGATGATTTTGAATACTGGTTGCT  
AAGGCAAGGAGTGTGTGTCGGTACTGGAGATCCCATCCAGCGTCTTGGTGCTTACATTGTAGAAGGCC  
TCGTAGCAAGAAAGGAGTTATCTGGAACCTACATATACAGGAGTTAAAGTGTAAAGGAGCCGGCTGGTA  
AGGACTTGTCTCCTACATGTATATCCTCTATGAAATATGTCCTTACCTAAAGTTCGGCTACATGGCTGCAA  
ATGGTGCCATAGTAGAAGCATGCAGAAATGAAGATCGCATCCACATTATAGACTTCCAATTGCACAGGG  
GACCAATGGATGACTCTTACAAGCTCTGCAGCACGACCCGGTGGTGCCCCCTACGTACGTATTACAG  
GAATTGATGATCCAGTTTACAGTACGCTCGGGGAGATGGATTGGCTGCAGTTGCCAGACGGCTATCAGC  
AATTTCTGAGGAATCAACATTGCTGTTGAGTTTCATGCAGTGCCAGTTTTTGTCCGGAATCACTTGGG  
ATATGCTTGATGTAAGGCCTGGTGAGGCTCTGGCTGTAACCTTTCTTTGCACTTACCACACCCCTGAT  
GAGAGCGTTGACGTGAATAACCCTAGAGATGGTCTCATTAGGATGATAAAGTCGCTTAGCCCCAAGATAG  
TCACTTTGGTGAGCAAGAATCAAACACGAACACAGCTCCATTTCTCCCTAGGTTTGTAGAAGCTCTAGAT  
TACTACCATGCAATGTTTGAGTCCATAGATGTGACCCTACTAAGGGACATGAAGGAGCGGATCAATGTGG  
AACAGCACTGTTTGGCTAGGGATATAGTGAATGTCATAGCATGTGAGGGCAAGGAAAGAGTAGAACGTC  
ACGAGCTATTGGGGAAGTGGAATCCAGGTTTCATGATGGCAGTTTTTCAGCAATATCCTTTGAGCTCTTAT  
GTGAATTCAGTGATTAAGGACCTCATGAAGCGTACTCGGAGCATTATACACTGGTGGAGAAAGACGGA  
GCTATGCTGTTGGGGTGGAAGGAGCGGAATCTAGTCTCTGCGTCTGCTTGGTTTTAA

Amino acid sequence:

MDSHHLVAYGVTVGSDLSYSSCPTVSPLNRPFGTSKFDNSPLVNYFNSETFNTVSDYQEQPSCENLSGASS  
SGSSLDYNQYFHRPSPSEDHLPEAPYSRNMKHTLLQLESALMGPDKAMKSSPYLGENMGAQTSGQRYKAW  
NKEAQVVRHQQSVVSILNGIQSDKRDVNMEDLPLQGVSSN**LKQLLIACARALAENKLDDFEILVAKARSVVSV**  
**TGDPIQRLGAYIVEGLVARKELSGTTIYRSLKCKEPAGKDLFSYMYILYEICPYLKFGYMAANGAIVEACRNEDRIHI**  
**DFQIAQGTQWMTLLQALARPGGAPYVRITGIDDPVSQYARGDGLAAVARRLSAISEEFNIAVEFHAVPVFAPE**  
**ITWDMLDVRPGEALAVNPLQLHHTPDESVDVNNPRDGLIRMIKSLSPKIVTLVEQESNTNTAPFLPRFVEALDY**  
**YHAMFESIDVTLRLDMKERINVEQHCLARDIVNVIACEGKERVERHELLGKWKSRFMMAGFQQYPLSSYVNSV**  
**IKDLMKRYSEHYTLVEKDGAMLLGWKERNLVSASAWF-**

SIGRAS4

Solyc01g100200.2.1

Nucleotide sequence (ORF):

ATGGAAGCCCTTTTTCAAGAACAGCTTTTCTTGTGCTGATTCTTTATTTTTAGGCACCCTTCATTCCAA  
TGGATCCAAGAAAAGAAGTTATACAAAATGGACTCAATAATCATCCTAGTTTTGATCAAGACTTTTCA  
AATCATGTTGTTGGAGTGGGAGATTCTTCTCCTCCTCAAGAGGAAGGGGAAAAGGACTATTCTGATG  
CAATGTACAAATCTTAAGTCAGATGCTTATGGAAGAAGATGATTTGGAGAATAAGCCATGTATGTTTCA  
GACTGCATGGCTCTCAAGCTAAAGAGAGATACTTATCTGATGACTTCATGGATCCGAAAACAATTC  
CCCACAATCTGTCATTATCAATCCACAGATTCTCTAGTTTTCTCAGCAACTATTACCTGATTCTATTGAG

TCACCTCAATGGGATCTTAATTTGAATCCCCTGCTTCCATGTCCACTTTATCTAATCATGACTCTTTCTTCA  
CTTCCTTCGGCAATGGCCATTTTGAAGAAGGAGCTGTCAATGTGTTACAAAGTGGCAGCAGCAGCAATTC  
ACCAACTGGTCTGAGGGAAAAGAAAATCGACATCGAGGAGATGTTGCTGCAGACCAGCAGAGGAGTA  
ACAAACAGATGGCTACATTTGTTTCATGATGAATCTGAACCATTGGAAATGTATGACAATGTGTTGCTTTGT  
TTAAACAATCCATATGTGGAACAGCATAGTGCTACTAGTATCACTTCTACTCGCCGCTAATGAAGCCAA  
AAAAACAAGCAAAGTTGGAAGGCCGAGAGGTGGTAGGAAGCATAGCAGCATTGTCAAGAAGGAAATGG  
TGGATTTGAGGGCTTTGTTGACTCAGTGTGCGCAGGCCATGGCAAATATGATAGCAGAACAGCTAATGA  
GCTGCTGATGCGGATAAGAGAACACTCTACACCTCATGGCGATGGGACGGAGAGGTTGGCTCATTATCTT  
GCCAATGCCCTTGAAGCACGCCTGTCCGGCACGGGAACAGCTTTGTATACAGCCTACGCACCCAGTAGGA  
TATCAGCTGCTAACATTTTGAAGCTTACAAGGCATTTATCAGAGCATGTCCATTCAAGTTGCTGTCAAAC  
ATTTTCGCAACAAGTATATCCGAAAGGTCATTGCTGGAGCACCAAAGATACACATAATTGATTTTGGTAT  
CTTGATGGTTTCCAATGGCCCTGTCTCATAAAGGTCTATCCATGAGGGCTGGGGGACCTCCAGAGCTC  
GCATTACTGGAATCGATCTTCCCAGCCAGGTTTCAAGCCAGCAGGGAGGGTTGAGGAGACAGGGCGTC  
GCTTGGAAAAGTACTGCAAGCGATTTAGTGTCCCTTTCGATTCAAAGCCATCGCGAAGAAGTGGGAAAAG  
CATCACGCTTGAAGAGCTTGAGGTTCAAAGGGATGAAGTGTGGTAGTTAACAGTTTGTATAGGCTAGGA  
AACATACCTGATGAGACAGTAGTACCAAACAGTCCAAGGGATGCTGCTCTGAATTTAATCAGGAGGATCC  
GTCCTGATTTATTCATCCATGGTGCCTTGAACGGTACTTTCAACACTCCATTTTTCGTACACGATTCAGGG  
AGGCGCTTTTTCACTTCTTCACTGTATGATATGTTTGGAGGCTACTTCCCCGCGAGGACGAGGACAGA  
AAGCTATTCGAGGAAGAGGTTTTTGAAGAGATGCTATGAACGTGATTGCTTGTGAAGGGACAGAGAGA  
GTTGAGAGACCTGAAACATAACAAGCAGTGGCAACTTAGATGCGTTAGAGCTGGATTCAAACAGGTGCCA  
CTTGACCAGGAGATTGTGAAGATAGTGAGGAATAAAGTGAGGTGCGAGTACCACAGGGACTTCTCAGTT  
GATGAAGATGGACTGGATGCTACAAGGATGGAAAGGACGCGTAATTTACGCTCTCTTGTGGAAGC  
CTACAAAGCAGTCTGTAATAATTAGTCTAG

Amino acid sequence:

MEALFQEQLFPCADSFIFRHPSIPMDPRKEVIQNLNNHPSFDQDYFSNHVVGVDSSPPPQEEGEKDYSDA  
MYKFLSQMLMEEDDLENKPCMFHDCMALQAKERYLSDVLHGSENNYSPQSVIINPHDSSSFLSNYSPDSIESP  
QWDLNFESPASMSTLSNHDSFFTSFGNGHFEEGAVNVLQSGSSNSPTGLREKKNRHRGDVAADQQRSNKQ  
MATFVHDESEPLEMYDNVLLCLNNPYVEQHSATSITSYSPNEAKKTSKVGRPRGGRKHSSIVKKEMVDLRALL  
TQCAQAMANYDSRTANELLMRIREHSTPHGDGTERLAHYLANALEARLSGTGTALYTAYAPSRISAANILKAYKA  
FIRACPFKLLSNIFANKYIRKVIAGAPKIHIDFGILYGFQWPCLIQGLSMRAGGPPPELRITGIDLQPGFKPAGRVE  
ETGRRLEKYCKRFSVPFVKAIKKWESITLEELEVQRDEVLVNSLYRLGNIPDETVPNSPRDAVLNLRIRRPD  
LFIHGALNGTFNTPFFVTRFREALFHSSLYDMFEATLPREDEDKLFEEEVFARDAMNVIACEGTERVERPETYK  
QWQLRCVRAGFKQVPLDQEIVKVRNKVREYHRDFSVDEDEGHWMLQGWKGRVIYALSCWKPTKQSVKLV-

SIGRAS5

Solyc09g018460.1.1

Nucleotide sequence (ORF):

ATGATTCAATCAGAGATTCTCACAACTCATGGTCTTCAACTAACCAAATTCATCCTTTTTATGAATATCAA  
ATCATGTTATTTCTAATTATTCTTCACTTAACTCCAAAGATCAAGATTCTCTGAAATTTCTTATCAGATTT  
ACTTCCCTTTTCTCTGATGATGTTCTTAATGATCTCCCATGGATGATATCGAGTTCGTTGATGTCTCTCGAT  
GGTTAAACGATAGTGAAAATGAAGGAAATGAAAATACAAAAATCACTTCAAGACTAAAAAAGATGGAG  
ACTCATGTAGTCTGCACCTTTCAAGCATATCCATTGATACCTCAACGACAATACAGTCAAGAAATGATGTT

ATTTACAAAGTAGAGAAATCGACAACCAATGAGAATTCATCATTTATTGTCGGTGTATGGAGAGGCAA  
TGGAAAATGGTCACAAAAGAATTAGCAGAAGTGATCATACGATGCATAAAGGGGAAAATAAATCCTTTAG  
GTGAATCGTTGGAACGCGTTGCTTCAAACCTATTCCAGCATACAGAAGAAGACGATCAAGAAAGTACTT  
GAAACAAGAATCAAACAAGATTATTGAAGCAGCATTCAAAGCCTTCTACCAAATTTTCCCATTAGGGAAAT  
TTGCTCATTTTGTGCTAACTCCGCAATTATAGAAGCTATGCCTGATGAGTCACAGACAATTCACATAATAG  
ATTATGATATGGGAAAAGGGATTCAATGGCCTCAATTATTAAGCCATGAGCCAAAAAAGAAAGATTTT  
GAGATTAACATCCATAAAGAAATCAACAAGTGATCATTGGAGATTTGAGGAAACAAAAAGAAGACTTGT  
GATTATGCAAATCTTTTTGGCCTAACATTACAAGTTGATGAGATGACATTTGAAGAATTGGCAAGTGAATT  
GAGAAGAATGAAGAAAAGGGTAAAAGGAGTGAATGGTTGGTTTTCACTGTATGTTCAATTTTCTTAC  
ATGGGAAAAGGATGCGTAGAATCGACGCGTTGGGGTTTTCTGAACTAGCTAAGGAGTTGTTATTAGCT  
AATTCTTCAACACACAGAGGACTTGTCACTTTTGGCGATGGAGAAGCAATGGATAATAGTCATCATAACAC  
AAACAATACTTTTTCTCATACTTTAACAAGAATTTGTTACATTACCAATCGATTTTTCGAGTCATTGGAATTG  
TATTTTCCCTCTCATCTTGCACAAGCAAGAGTTGCCATGGAATCTCTTTTTCTAGCTCCTGAAGTGTGCTCAT  
TTTCTTGGTTCCAAAAGTGGGAAGAGATGACAAATGTTTCTGATTCTTGTAGTGAATGGGGTTGCAAGG  
TATGAGAATAAGCAAAGAAAACCTTATTACAAGCCAAAGAAGTGGTGAATGAAAGAGAAACTCCATTTAA  
GGTGAGGATTGAAGAAGAGAGGCAACATGAAATGGTCTTGAATGGAAAGGCATATCTATTGTGAGAGT  
TTCAACTTGGATGTAG

Amino acid sequence:

MIQSEILHNSWSSTNQIHPFYEYQNHVISNYSSLNSKDQDSSEISLSDFTSLFSDDLNDLPMDDIEFVDVSRWL  
NDSENEENENTKITSETKKDGDSCSPALSSISIDTSTTIQSRNDVISQSREIDNQMRIH**HLLSVYGEAMENGHKEL**  
**AEVIIRCIKGKINPLGESLERVASNLFQHTEEDDQESYLKQESNKIIEAAFKAIFYQIFPLGKFAHFAANSIIIEAMPD**  
**ESQTIHIIIDYDMGKGIQWPPIIKAMSQKRKILRLTSIKKSTSDHWRFEEFKRRLVDYANLFLGLTLQVDEMTFEELA**  
**SELRRMKKRGRKRESEWLVFNCFMFQFSYMGKRMRRIDALGFLKLAKELLANSSTHRLVTFGDGEAMDNSHH**  
**NTNNTFSSYFNKNLLHYQSIFESLELYFPSHLAQARVAMESLFLAPEVCSFSWFQNWEEMTNVSDSCSEMGLQ**  
**GMRISKENLLQAKEVVNERETPFKVRIEEERQHENVLEWKGISIVRVSTWM-**

SIGRAS6

Solyc04g064550.1.1

Nucleotide sequence (ORF):

ATGCTTTAGTTAGATCTCTAAGATCAATTGGAAATGGGAAGCTGTATTTTCAAATGGTCACAATGATAA  
CTCTAGTTTGGCTACATCCATGTACACCAAAAATGCACGCGGGATTATGTATGCAACCGAGTCTAGCAGCA  
CAGACAGTTATGATCCAAAGTATCTGCTAGAATCACCTTACCTTCTGAAGAACTTTTAAACACATCACCTA  
CAGATGTCTTGGGGAATCCATTCCACCAGAGACATTCATCTTCTTCCATCCATCAAGAGATTACAATCAG  
GTTAGTTATGATTCAGCAGACTGTGTCAATCAAAGTCCAGATTCATCAGAATATAATGATGGAAGGGTGA  
CAATGAAGCTTCAAGAACTTCAAAGGGTACTTTTTCGATGATAACGAAATTGAAGGAGATGATGTATTTGC  
TCGTGGCGAGACTGTGGACATAGATGATGAATGGTTAACCAGATCCGAACAGAGTTACTTCAGGAGTCT  
CCGAAGGAGTCTACATCGGCAGATTCTAATACCAGTAGCAGTAGTAGCTACAAGGAAATATCTGTATCTG  
CTCCTCAAACCTCAAAGCAAATGCTGTTTAGTTGTGCTGCTGCTATTCAAGATGGACACATTGAACAAGCG  
TCATCTATGATTAATGAACTGAGGCAGATGGTCTCCATCCAGGGAGATCCTCTTGAAGGACTGCAGCTT  
ACATGGTAGAAGCTCTTGCAGCTCGAATGGCTACATCTGGCAGAGGTCTTTATAAGCTCTAAAATGCAA  
AGAAGCCACCTCTTCTGAGAGACTCTCTGCTATGCAAGTCTCTTTGAAGTATGTCCATACTTCAGGTTTGG  
TTTTATGGCAGCAAATGGTGCATCCTAGAGGCTTTTAAAGATGAGAAAAGAGTTCACATCATAGATTTTG

ACGTTAACCAAGGAAGTCAATATTACACTTTATTGCAGACATTGGGTAGTATGCCTGGTAAGCCACCCCAT  
GTGAGGCTAACTGGGGTAGACGACCCTGAATCTGTCCAACGTGCTATTGGAGGCCTTAATGTCATTGGTC  
TGAGGCTTGACAGCTGGCCAAAGATCTTAAGATCTCTTTGAGTTCCAAGCAGTCTCTTCCAACACTGCA  
TTAGTACCCCCAGCAATGTTAAACTGCCGTCCTGGTGAAGCTGTTCTAGTAACTTTGCGTTCCAGCTTCAT  
CACATGCCTGATGAAAGTGTATCAACGGTAAACCAAAGAGACCAGCTTCTGCGGATGGTGAAGAGCTTAA  
ATCCAAAGCTGGTAACAGTTGTTGAGCAAGACATGAACACTAACACTGCTCCATTTCTACAAAGGTTTGCA  
GAAGTCTACAACACTATTGTGCCGATTGAGTCTCTCGATGCAACTCTTCAAGGGATAGCCAAGAGAG  
GGTCAATGTAGAACGGCAATGTCTCGCACGTGATATCATCAACATTGTTGCCTGTGAAGGATTGGAGCGA  
ATAGAGCGTTATGAGGTTGCAGGGAAGTGGAGAGCTAGGATGATGATGGCTGGTTTCACTCCATCCCCA  
ATTAGCCGAAATGTCTATGAATCGATCCGGAATCTTATCAAGCAATATAGCGAAAGGTACAAAGCAGAGG  
AGGAGGCAGGTGCACTTTATTCGGGTGGGAAGACAAAACCTTGACTGTTGCTCAGCTTGGAGGTAG

Amino acid sequence:

MSLVRSLRSIGNGLYFQNGHNDNSSLATSMYTKNARGIMYATESSTDSYDPKYLLESPSPSEELLNTSPTDVLG  
NPFHQRHSSSFHPSRDYNQVSYDSADCVNQSPDSSEYNDGRVTKLQELERVLFDNEIEGDDVFARGETVDI  
DDEWFNQIRTELLQESPEKSTSADSNTSSSSSYKEISVSAPQTPKQMLFSCAAAIQDGHIEQASSMINELRQMVS  
IQGDPLGRTAAYMVEALAARMATSGRGLYKALKCKEATSSERLSAMQVLFVCPYFRFGFMAANGAILEAFKDE  
KRVHIIDFDVNQGSQYYTLLQLGSMPGKPPHVRLTGVDDEPESVQRAIGGLNVIGLRLAQLAKDLKISFEFQAVS  
SNTALVTPAMLNCRPGEAVLVNFAFQLHHMPDESSTVNQRDQLLRMVKSLNPKLVTVEQDMNTNTAPFL  
QRF AEVYNYYCAVFESLDATLSRDSQERVNVERQCLARDIINIVACEGLERIEREYVAGKWRARMMMAGFTPSP  
ISRNVYESIRNLIKQYSERYKAE E EAGALYFGWEDKTLTVASAWR-

SIGRAS7

Solyc07g065270.1.1

Nucleotide sequence (ORF):

ATGAGGCCTTCTCAGAACCCTGAGGAAATCAACGAGTTCAACAAATTCTATAACCAACCCATAGAGTATCA  
AGAATCCTATTTCTGCCTTCCGTTAACAATCCGAACAACAACCAATCGTTCTATGCTGATGTCTCTGCCTT  
AAAACCCGCCAACACTGTTATGTTGAATCATCCGCGGGAAATTCTAGTGAACCTGTTTCTGATTCACCTCC  
TATTGTTAATTTCAACCCCATGATGAACCAAGGTTCTGATTTCGTGTCGTTCCAGACATGCATCATTCTCTGA  
TGATACATTTAGTCGTCGGGTAACAGTTCGTGCTACACTAGTATGTTACTGACCTGAAGCACAAGTTAA  
GGGAACCTGAAACTGCAATGCTGGGGCCAGATTAGAAAAGCTTGAATCATTAAATAACTATCCCTGT  
GACTGCAGCCAATCAAGTTCATCAGAGTCGGATAAATTGGTTGGAATGATGGAGATGATGCCTAGCGG  
AGACTTGAAAGAAGTTCTAATTGCTTGCTAAAGCAATAGCGGAGAATAATTTGATCACAGCTGAATGG  
TTAATGTCAGAACTACGCACGGTGGTATCTGTTTGTGGGTCTCCATACAACGTTTAGGTGCTTATATGCT  
GGAAGGTTTAGTTGCTAGATTGGCCTCCTCGGGAAGCTCCATCTACAAGGCCTTAAGGTGCAAAGAGCCT  
ACTAGTGTGAGCTATTCTCGTACATGCACTTGCTTTATGAAATCTGTCCATACTTCAAGTTTGGATATTTG  
TCAGCAAATGGTGAATTTGTTGATGCCATGAAAGATGAGAACTCAATTCATATAATCGATTTCCAGATTGC  
TCAGGGTAGCCAGTGGATCACCTTAATCCATGCTCTTGCAGCACGGCCTGGTGGACCTCCAAGAAATCCGC  
ATCACAGGGATTGATGACTCTACATCAGCTTACGCCAGAGGAGGAGGGATTGAAATCGTAGGTGCAAGA  
CTGTCAAGCATTGCTGCATCTTGAATGTACCTTTCGAATTTATCCCGTGTCTGCTTCTTGTCCAGATATTG  
AGATTGAGCATCTTAAGGTTCTTCCCGGGGAACCAATTGGCTGTTAACTTTGCGCTCGTCTTGCACCATATG  
CCTGATGAGAGCGTTGGAACCTCAAATCACAGAGACAGACTTCTGAGGATGGTTAAAAGCTTATCTCCCA  
AGATTGTTACCTTAGTGGAGCAAGAGTCCAACACTAACACAGCCCAATCTTCCCGAGTTCTTGGAGACA

CTGAACTACTACCTATCTGTTTTCGAATCAATAGACGTGGCTCTACCTAGAGACCATAAGGAACGAATCAA  
CGTTGAGCAACACTGCTTAGCCCGTGAAATTGTCAACATATTAGCATGTGAAGGGGCAGAGAGAGTGG  
ACGACACGAGCTGCTTGAAAGGTGGAGATCACGATTTGCTGTGGCCGGGTTAAACCATATCCGTTAAGC  
TCCTCAGTAAATGCTACTATCAAGACCCTGCTGGAGAATTACTACCAAAGTTATACGCTTAATGAGAGAAA  
TGGCGCGCTCTATCTTGGCTGGATGAATCGAGATTTAGTTGCTTCTGTGCATGGAAATAA

Amino acid sequence:

MRPSQNPEEINEFNKFYNQPIEQESYFLPSVNNPNNNQSFYADVSAKPAQHCVVSSAGNSSELVSDSPPIV  
NFNPMMNQGSDESCRSDMHSPDDTFQSSGNSSCYTSDVTDLKHKLRELETAMLGPDSESESFNNTIPVTAA  
NQVPSESDKLVGMMEMMPSGDLKEVLIACAKAIAENNLITAEWLMSELRTVVSVCGSPIQLGAYMLEGLVAR  
LASSGSSYKALRCKEPTVELFSYMHLLEYICPYFKGYLSANGAIVDAMKDENSIIHDFQIAQGSQWITLIHALA  
ARPGPPRIRITGIDDSTSAYARGGGIEIVGRRLLSSIAASCNPFEFHPVSASCPDIEIHLKVLPEPLAVNFALVL  
HHMPDES VGTQNRDRLLRMVKLSLSPKIVTLVEQESNTNTAQFFPRFLETLNYYLSVFESIDVALPRDHKERINV  
EQHCLAREIVNILACEGAERVERHELLERWRSRFAVAGFKPYPLSSSVNATIKTLLENYYQSYTLNERNGALYLGW  
MNRDLVASCARK-

SIGRAS8

Solyc02g085600.1.1

Nucleotide sequence (ORF):

ATGAAAGTGCCCTTTTCCACTAATGATAACGTAAGTTCTAAGCCATTGGTTAACAGCAACAACAGCTTTAC  
TTTTCCAGCCGCTACCAACGGTTCTAATTTGTGCTACGAACCTAAGTCAGTGTCTCGAGCTCCGTCGTAGCC  
CAAGTCCTATAGTTGATAAGCAGATTATAACAACGAATCCTGATTTGTCTGCTCTTTGTGGTGGTGAAGAT  
CCTCTCAATTAGGAGATCATGTTCTGAGTAACTTTGAAGATTGGGATTCTTTGATGAGAGAATTGGCTT  
GCACGACGATTCTGCTTCGCTTTCAAAAACGAATCCTCTACCCACAGCGAATCGCTGACTCAGTTCCATA  
ATCTCTCCGAGTTTTAGCTGAATCGAATCAGTTTCTAGTCTGATTTTTCTTTCTCAGACACTAATTTCCC  
TCAGCAGTTTCCGACGGTGAATCAGGCAAGTTTCAACGCCCCTGATCTCTCCGGGGATATCCACCAGA  
ATTGGAGCGTAGGATTTGATTATGTGGATGAACCTATTCTGTTTTGCTGAGTGTTCGAAACAAACGCTTTC  
CAACTCGCACATGTGATACTGGCACGCCTCAATCAACGGCTCAGATCCGCAGCAGGAAAACCTCTCCAAC  
GAGCTGCCTTTTACTTCAAGGAAGCACTTCAAGCGCAGCTCGCCGGATCAGCTCGGCAAACCTGTTCTTCA  
AGTTCCTCCGACGTAATTCAAACGATTAATCTTATAAAATATTGTCAAATATTTCTCCGATCCCTATGTTCT  
CTAGCTTACGGCGAATCAGGCCGTGCTTGAAGGAGTTGACGGCTCCATGCTAGTCCACGTATCGATTTT  
GACATCGGACTTGGTGGTCACTGGGCTTCTTTCATGAAAGAGTTAGCCGACAAAGCCGAGTGCCTGAAAG  
CCAACGCGCCGATCCTTAGAATTACGGCTCTAGTTCCTGAAGAGTACGCTGTGGAATCAAGGTTAATTAG  
AGAAAATTTAACCAATTTGCTCGTGAACCTAATATCGGTTTCGAAATTGATTTTGCCTAATTCGTACATT  
CGAATTGTTATCCTTCAAAGCGATAAAGTTCATGGAGGGAGAGAAGACAGCGGTGCTTTTATCTCCCGCT  
ATCTTCCGACGGGTGCGGTGAGGTTTGTAAATGAACTCCGTCGAATATCCCCTAACGTGGTGGTACACG  
TGGACAGCGAAGGACTTATGGGTTACGGTGAATGTCTTCCGGCAGACAGTAATCGACGGGCTGGAAT  
TTTACTTACTACTACTGGAATCACTGGAGGCAGCAAATATCGGTGGTGGAAATTGCGGGGATTGGATGAG  
AAAAATAGAGAATTCGTGCTGTTTCTAAGATAGTTGATATGATCGGAGCAGTAGGGCGGCGTGGAGG  
TGGAGGATCGTGGAGGGATGCCATGGTGGATGCCGATTCGGGCCGGTTGGACTAAGCCAGTTTCCCGA  
TTTTCAAGCAGATTGTTTATTGGGTAGGGTACAGGTAAGAGGATTCCACGTGGCAAAGAGACAAGCAGA  
GATGTTGCTTTGCTGGCATGACAGGGCCCTAGTAGCCACGTCAGCTTGGAGGTGTTAA

Amino acid sequence:

MKVPFSTNDNVSSKPLVNSNNSFTFPAATNGSNLCYEPKSVLELRRSPSPIVDKQIITNPDLSALCGGEDPLQLG  
DHLVSNFEDWDSLMRELGLHDDSASLSKTNPLTHSESLTQFHNLFSAESNQFPSPDFSDTNFPQQFPTVN  
QASFINALDLSGDIHQNWSVGFYVDELIRFAECFETNAFQLAHVILARLNQRLRSAAGKPLQRAAFYFKEALQ  
AQLAGSARQTRSSSSSDVIQTIKSYKILSNISIPMFSSFTANQAVLEAVDGSMLVHVIDFDIGLGGHWASFMKEL  
ADKAECRKANAPILRITALVPEEYAVESRLIRENLTFARELNIGFEIDFVLIRTFELLSFKAIKFMEGEKTAVLLSPAIF  
RRVSGGFVNELRRISPNNVVHVDEGLMGYGAMSFRTVIDGLEFYSTLLESLEAANIGGGNCGDWMRKIENF  
VLFPKIVDMIGAVGRRGGGGSWRDAMVDAGFRPVGLSQFADFQADCLLGRVQVRGFHVAKRQAEMLLCW  
HDRALVATSAWRC-

SIGRAS9

Solyc06g036170.1.1

Nucleotide sequence (ORF):

ATGTCCTCGGATTTCTCCGGCGGAGTTCCAGACTTTCACGGCGGCGCCGGTAGATCCAGCTTGATTCCGAT  
GAACAACCTCCAGCCACAAATTAACCAACGCCCTGACGGAGTTTCTCAGAATCTCCACCGGAGAC  
CTATGTTTCATCGGAAACGGTCACTCGCAGCCTTCAACAGCAGCAACAGTTTCAGTTTCTACAACAACAA  
CAGCAGCAACAAGGTTTGGGATTTTATCTACGTAACGTGAAGCCTAGAAATTACCAGCAGGCATCTCCAA  
TTTCTCCTCTAGATTACTCTGTTTCTCCTCGTTGATTTTCATCTGAATTTTCTCCGATGACTCCACGCCATCT  
CTCCCGATTTCCACGGCGAACACGAACGGGGTTTTATCTTCTGGTAACCCGAATTGTTTCAGCAGTTGCTTC  
TTACCTAAATCAGGTACAGAACAGTTTATACCAGGAATCAGAGGAAAAATGATGAATCGACTGCATGAG  
TTAGAGAAACAGCTCCTAGAAGACAACAATGAGGAGGAAGAAGATACAGTCTCTGTTGTGACTAACAAC  
GACGAGTGGTCGGAAACAATAAAGAATCTGATTACTCCGACTAGTAACCACTTATCCCCGGCATCATCTAC  
GTCTTCATGTTCTTCTATGGAATCTCCGCCAGTATCTTCTCCAGGCAGTCTATTGTCGAAGCTGCTACC  
GCAATAATCGACGGAAAAACCAATGTTGCAGTACAGATCCTCACGCGCCTCGCACAGGTAGCTGATGTTA  
GAGGGTCTTCCGAACAGCGGCTGACGGCGTACATGGTTTCAGCACTCCGATCGCGCGTGAACCTCCACGGA  
GTACCCACCGCCCGTATGGAGCTGCGTAGCAAAGAGCACGCAGTTTCAGCTCAAAACCTCTACGAGATA  
TCCCCGTGTTTCAAGCTAGGATTTATGGCAGCTAATTCGCCATTGTTGAAGCTGTAGCTGATCATCCCTCA  
AACAAAATTCAGTCAATTGATTTGCACATAGGACAAGGTGGACAATACTTGCATTTACTACACGCGCTAGC  
TTCCAAGAAAACAGATTATCCCATCAGCTTAAGAATCACGGCGATCACAACAGAGTTACCGGTCAGAGCT  
GATCACAGTTTAAATCCATTGAAGATGATCTGAGAAGTCTAGCAAACAAAATCGGTATTTCTTGATTTT  
CAAAGTAATTTACGTACAATCACCGATTTGAGTAGGGGAAAATTAGGGATTGAACACGACGAAGCTTTA  
GCAGTGAATTTGCATACAGATTATATAGATTACCCGACGAGAGCGTAACAACAGAGAATCTAAGAGACG  
AGCTTCTCCGGCGAGTGAAGGGGTTATCACCAAAGGTGGTACATTAGTAGAGCAAGAGTTGAACGGGA  
ACACGGCGGCGTTTGTGGCGGTGTAACGAGGCGTGTGGATATTACGGAGCATTGTTGGATTTACTGG  
ATGCAACTGTATCAAGAGAGGAAACGGGTCGGGTCAAGATCGAAGAAGGGCTGAGTCGTAAATTAACAA  
ACTCGGTAGCGTGTGAAGGTAGGGATCGTTTGGAGAGATGCGAGGTGTTTGGTAAATGGAGGGCCCGA  
ATGAGTATGGCTGGGTTCCGGGCCGAGGCCATGAGTCAACAAATTGCTGATTTACTGCTTAAGAGGCTTA  
ACTCGGGCCACGTGGCAATCCAGGATTCATGTGAATGAACAAAAGTGGGGTATTAGGTTTGGATGGA  
TGGGAAAAACCTCACCGTTGCTTCTGCTTGGTGTAA

Amino acid sequence:

MSSDFSGGVPDFHGGAGRSSLIPMNNSQPQIQLTQRPDGVSQNLHRRPMPFIGKRSLAAFQQQQQFQLQQ  
QQQQQGLGFYLRNVKPRNYQQASPISPLDYSVSSSLISSEFSMPMPRHPLPISTANTNGVLSSGNPNCSAVASYL



NQVQNSLYQESEKMMNRLHELEKQLLEDNNEEEEDTVSVVTNNDWEWSETIKNLITPTSNHLSPASSTSSCSS  
MESPPVSSP**RQSIVEAATAIIDGKTNVAVQILRLAQVADVRGSSEQRLTAYMVSALRSRVNSTEYPPPMELRSK**  
**EHAVSAQNLYEISPCFKLGFMAANFAIVEAVADHPSNKIHVIDFDIGQGGQYLHLLHALASKTDPISLRITAITT**  
**EFTVRADHSLKSIEDDLRSLANKIGISLIFKVISRTITDLRGLGIEHDEALAVNFAYRLYRLPDESVTTENLRDELLR**  
**RVKGLSPKVVTLVEQELNGNTAAFVARVNEACGYGALLDSL DATVSREETGRVKIEGLSRKLTNSVACEGRDR**  
**LERCEVFGKWRARMSMAGFGPRPMSQQIADSLKRLNSGPRGNPGFNVNEQSGGIRFGWMGKTLTVASAW**  
C-

SIGRAS10

Solyc03g025170.1.1

Nucleotide sequence (ORF):

ATGTCGTCAGGTTTCTCCGGCGAGATTTACGGCGCCGGTGGGAGATCTACCATGAATAACAACAACACTCAC  
AAAGGCCTTATTCGTCGCCGCTATCGGGTATTTGCTGACCCGGTTACGCAGATGGTTCATCAAGGGAG  
ACCTAATTTGATGGGGAAGCGATCTCTAGCGGAGTTTCAACAACAGCAGCAATTGCAGTTTCTACAACCTC  
AACAGCAGAAACAACAGCAGCAGCAGATGATGCTACTTCAACAGCAGCAGCAGCAAGGAATTGGGTTTT  
ATCTCCGTAAACGTAAAGCCTAGAAGTTATCAGCAGTCTTCCCAATGTCTCCTCTTCCCCTGTAGATTTTTC  
GATTGCCGCTGCTGCTTCAATTTATCTTCAATTCGAAATGTATCCACCATGATGAACACGCGCCAGGCTCT  
ACCGGTTCTGCAGCAGCCTGCTAATATGGGTGGGTTTTATCTCCGGTATTGAGAAATTATTCTACAGGGG  
TTTCGTCTCAATCCGGTTCAAACGGAGCAACCATCGGAGTACAGGAATCTGATAAAAAAATGATGAA  
TTGTCTTCAAGAGCTTGAGAAACAGCTCTTAGACGACAACGATGAAGAAGAAGGCGATACAGTTTCGGTC  
ATCACCAACAACGAGTGGTCGGAGACGATACAGAATCTGATTAGCCCCTCTCAGAACCAAAACCAAAATTC  
AGAAACTGGCATCACTATCTCCATCCTCTTGCATCTTCTGCTGTGCTTCTTCAACAGAATCTCCGGCAATAT  
CTTGCCAAAACAGTCTATAATAGAAGCAGCCACAGCAATATACGATGGAAAAAACGACGTCGCACTGGA  
AATCCTCACGCGCCTATCACAAGTTGCCAATATCAGAGGCTCCTCCGACCAGCGGCTAACGGCATAATG  
GTCGCCGCTTTACGGTCGCGCTTGAACCCCGTCGATTACCCACCGCCGGTCTGGAGCTGCAAAGCAAAG  
AACATACAGAGACTACTCAATCTATACGAGGTATCTCCCTGTTTCAAGCTCGGTTTATGCTGCCAAT  
CTAGCCATCCTTGAAGCTGTAGCTGACCACCAATTAACAAGCTTACGTCATTGATTTGACATCGGCCA  
AGGCGGACAGTACTTGCATTTACTGCATGCACTGGCTCCAAGAAATCAAACAACCCCGCCGTTTTAAAA  
ATCACTGCTTTACAGAACAAGCCGGCGGAGTTGACGAGAGACTCAATTCATCCACATGGAGCTTAACT  
CCGTCGCTAATCGGCTCGGGTCTGCTTATATTTCAATGTAATGTCTGTAAAGTAGCCGATTTGAGCCGA  
GAAAACCTAGGCCTCGACCCTGATGATGCATTAGCAGTTAATTCGCATTCAAATTATACAGATTACCCGA  
CGAAAGCGTCACAACAGAGAATCTCCGCGACGAGCTTCTCCGTCCGGTAAAAGCGTTATCACCGAAGGTG  
GTAACGGTGGTGGAGCAAGATATGAACGGCAACACGGCGCGTTTCTAGCGGTGTAACGAAGCGTGT  
GGCATTACGGTGCATATTGACTCGCTGGATGCTACAGTTCCACGAGACAGCATGGACCGAGTCAGG  
ATCGAAGAGGGACTGAGTCGCAAAATGTGTAATTCGGTAGCGTGCGAAGGGAGGGACCGGTTGAAAG  
ATGCGAGGTATTTGGGAAGTGGAGGGCCCGTATGAGCATGGCTGGGTTCCGGCCGAAGCCCGTTAGTCA  
AATCGTGGCGAATCTTTGCGTTCGAAGCTTAATTCGGGTACACGTGGCAACCCGGGCTTACCGTGAAC  
GAACAAAGTGGAGGTATTTGCTTTGGTTGGATGGGACGGACTCTACCGTCGCGTCAGCTTGGCGTTAA

Amino acid sequence:

MSSGFSGEIYGAGGRSTMNNNNSQRPYSSPLSGILPDPVTQMVMHQGRPNLMGKRSLAEFQQQQQLQFLQL  
QQQKQQQQMMLLQQQQQIGIFYLRNVKPRSYQQSSPMSPLSPVDFIAAAAASISSNSNVSTMMNTR  
QALPVLQQPANMGGFLSPGIQNYSTGVSSLNPVQNGATIGVQESDKMMNCLQELEKQLLDNDEEEGDTV

SVITNNEWSETIQNLISPSQNNQIQKLASLSPSSSTSSCASSTESPAISCPKQSIIEAATAIYDGKNDVALEILTRLS  
QVANIRGSSDQRLTAYMVAALRSRLNPVDYPPVLELQSKHEHTTTHNLYEVSPCFKLGMAANLAILEAVADHP  
FNKLHVIDFDIGQGGQYLHLLHALAAKSNPVLKITAFTEQAGGVDERLNSIHMELNSVANRLGVCLYFNVM  
SCKVADLSRENGLDPPDALAVNFAFKLYRLPDESVTTENLRDELLRRVKALSPKVTVVEQDMNGNTAPFLAR  
VNEACGHYGAIFDSL DATVPRDSMDRVRIEGLSRKMCNSVACEGRDRVERCEVFGKWRARMSMAGFGPKP  
VSQIVANSLRSKLNSTGRNPGFTVNEQSGGICFGWMGRTLTVASAWR-

SIGRAS11

Solyc12g099900.1.1

Nucleotide sequence (ORF):

ATGTTACAAGATGATGGTTCTTCATCTGTGACCTCATCATCACCTATTCAAGTATTTCCAATGATGTCTGTA  
TCACCTAGCTTTGGTTCATCAAATCAGTGGCTTAAGGAGCTGAAATCTGAAGAAAGAGGGTTGATTTGA  
TACATCTTTTGCTTGCTTGTGCTAATCATGTTGCTTCTGGTAGCCTTGAGAATGCTAATATAGCACTTGACC  
ATATTTCCCAACTGCATCTCCTAGTGGAGATACCATGCAAAGGATTGCTTCATATTTTACTGAGGCTTGA  
CTGATAGGATTCTAAGGAGTTGGCCTGGTCTTTATAAGGCGTTGCGTTGACTAAGTTATCGGTTGTCTCA  
GAAGAAATCTTGTTAGGAAGATGTTTTTCGAGATCTTTCCTTCTTGAAGGTGGCGTTTGTGGTCACAAA  
TCAAGCTATAATTGAAGCTATGGAAGGTGAAAAGATGGTTCATATTGTGGATCTTAATGCTGCTGAACCC  
CTGCAATGGCGTGCCTTGTTCAGGACTTGAGCGCGCTCTGAAGGACCGCCCATCTGCGCATTACTG  
GGGTTTCATCAGCAAAAAGAGGTGTTAGATCAAATGGCACATGTGCTTACTCAAGAAGCAGAAAACTGG  
ATATCCCTTTTCAGTTCAATCAAGTAGTTAGCAGATTGAAAATCTTGATGTTGAGAACTTCGCGTGAAA  
ACGGGGGAGGCTCTTGCATTAGTTCAATTATGCAATTGCACACCCTTCTAGCCCATGATAATGACAAGAA  
GTCCCTTTGCCTTTAAGCATTCAAATGGTGTAACTTAAACAGGGCACTAGTCAACCAAAATACTTTAGG  
GGAATTTCTTGAAAAGATATGGCTAATGGTTCAGTCCAAGCAATGACACCGCTTCTTCATCCCCGCTAT  
GTTCAACTGGTTCAACAAAGATGGATAGTTTCTCAATGCTTTGTGGGGTTTATACCAAAAAGTTATGGTG  
GTAACAGAACAAGATGCTAACCATAATGGGACAACCTTATGGAGAGGCTATCAGAGTCGTTACATTTTT  
ATGCTGCATTATTTGATTGTCTTGAATCGACGCTGCCAAGAACATCATTAGAGAGATTAAAGGTGGAAAA  
GATGTTATTAGGTGAAGAGATTAGAAACATTATAGCATGTGAAGGGATCGAACGAAAGGAGAGGCATGA  
AAAGCTCGAAAAGTGGTTCAAAGATTCGACACATCTGGTTTTGGGAATGTGCCTTTGAGTTATTATGCTA  
TGTTGCAGGCAAGAAGTTGTTGCAGAGTTACAGTTGTGAAGGATACAAGATCAAAGAAGATAATGGTT  
GCGTGGTGATATGCTGGCAGGATCGCCACTTTTCTCAGTGTCTTGGCGATGTAGGAAGTGA

Amino acid sequence:

MLQDDGSSSVTSSSPIQVFPMMMSVSPSFGSSNQWLKELKSEERGLYLIHLLACANHVASGSLENANIALDHISQ  
LASPSGDTMQRIASYFTEALADRILRSWPLYKALRSTKLSVSEIILVRKMFFEIFPFLKVAFFVTNQAIIEAMEG  
EKMVHIVDLNAAEPLQWRALLQDLSARPEGPPHLRITGVHQKEVLDQMAHVLTQEAEKLDIPFQFNQVVS  
LENLDVEKLRVKTGEALAISSIMQLHTLLAHDNDKKSPLPFKHSNGVNLNRALVNQNTLGEFLEKDMANGCSP  
NDTASSPLCSTGSKMDSFLNALWGLSPKVMVVTEQDANHNGTTLMERLSESLHFYAALFDCLESTLPRTSLE  
RLKVEKMLLGEEIRNIIACEGIERKERHEKLEKWFQRFDTSGFGNVPLSYAMLQARRLLQSYSCGYKIKEDNGC  
VVICWQDRPLFSVSSWRCRK-

SIGRAS12

Solyc07g047950.1.1

Nucleotide sequence (ORF):

ATGCAAGCATCACGGCGCAGAAGAACAACCATGTCTAATATGCTTTACTGTGAACCTGTGCAGAAGGCAG  
AGGCCTACTATCTGCCTCAGTTTCAAACCTTAGAAAGCCATTTGAGCTGCATTAATGGCAGCCTTGAGGT  
AATCACTCCTTCCAGACTTATCATGACCGCTATTGCATGCTGGAGGCGTCTTCTGCCACTGGAAGCAACGC  
TGTTTACCCTCACCATCAACTGCTAGTTTCTCATCAAATGGAAGCACGACGTGCAATCAAGAATCTCAGC  
TGTACCTGTGAGATGTTTCGTAGTCCCCTGAGACAACCTAATGAGTCCACCCATAAGTGGATCTTGTATT  
ACAGATGATGTGACTGATTTTCATGCACAAGCTAAAGGAATTGGAAACAGCTATGCTGGGACCTGATGCGG  
ACTTCCAGGAGAGTTATGATAATTCCTTGGCAAGCAGTATAGCTTCTCAGAAATTGATAGCTGGAGGCA  
AATGATGTTGGCCATACCTAGACGGGATTTGAAACAGGTGCTTATTGCTTGCGCAAAGCAGTTTCTGAT  
GGTGAATTAGTAACTGCACAAGTGTGATATCTGAGTTGCGTCAAATGGTATCAGTGTGAGGGGAACCAA  
TTCAGAGACTGGGAGCATACATCTTGAAGGGCTTGTGCAAGGTTGGGTGCATCAGGAAGTTCATATG  
CAAATCCTTGAGATGCAAAGAACCCGCAAGTTTTGAGCTGTTGTCTTATATGCACGTTCTTTACGAGATT  
GCCCTTACTTCAAATTTGGATACATGTCAGCTAATGGTGCCATTGCAGAAGCAATGAAGGACGAAAATAG  
AGTCCATATAAATTGATTTTCAAATTGCTCAAGGGAGCCAGTGGGTGCCTATGATCCAAGCTTTTGCAGCTC  
GTCCTGGAGGACCCCATATCCGCATAACAGGCATTGATGATTCCACCTCAGCATATGCTCGTGGAGG  
AGGCCTTGATATCGTGGGGCAGAGGCTTCCAAACTTGCTAAAACCTTCAAGGTTCTTTTGTGTTTCATC  
CTGCTGCCATGTCGGGTTCTGATATTCAGCTAAAAACCTTGAATTCAACCTGGAGAAGCACTAGCAGTA  
AATTTTGCTTTCACATTACATCACATGCCAGATGAAAGTGTGAGCACTGAAAATCATCGGGATAGACTATT  
ACGGATGGTCAAAAACCTCAACCCCAAGGTGGTTACCCTTGTGAGCAAGAATCTAATACAAATACTGCT  
GCTTCTTCTCGATTTCTTGAACCTTGGATTATTATTCAGCCATGTTTGAATCAATCGATATGACTCTTC  
CAAGGGGACACAAGGAGCGCATCAATGTTGAGCAGCATTGTTTGGCGAGGGACGTTGTTAACATCATAG  
CATGTGAAGGGATTGAAAGGGTAGAACGACATGAACCTTCTGGTAAGTGAAGTCGCGGTTTGAATGG  
CTGGTTTAACCCATACCCATTGAGTTCATTGGTGAACGCTACGATCAAGACATTGCTAGAGAGCTACTCT  
GATAAGTATAGGCTTGAAGAAAGAGATGGTGCTTTACCTTGGTTGGATGAACAGAGATTTGGTTGCTT  
CTTGTGCCTGGAAATAA

Amino acid sequence:

MQASRRRRTTMSNMLYCEPVQKAEAYYLPQFQTLLESHLSCINGSLGGNHSFQTYHRYCMLEASSATGSNAVY  
HSPSTASFSSNGSTTCNQESQLYLSVDRQSPETTNYGSPISGSCITDDVTFMHLKLELETAMLGPDADFQESYD  
NSLASSIASSEIDSWRQMMLAIPIRRD **LKQVLIACAKAVSDGELVTAQVLISELRQMVSVSGEPIQRLGAYILEGLV  
ARLGASGSSICKSLRCKEPASFELLSYMHVLYEICPYFKFGYMSANGAIAEAMKDENVHIIDFQIAQGSQWVP  
MIQAFARPGGPPHIRITGIDDSTSAYARGGLDIVGQRLSKLAKTFKVPFEFHPAAMSGSDIQLKNLGIQPGEA  
LAVNFAFTLHHMPDESSTENHRDRLRMVKNLNPKVVTLVEQESNTNTAAFFPRFLETLDYYSAMFESIDMTL  
PRGHKERINVEQHCLARDVVNIIACEGIERVERHELLGKWSRFRMAGFNPYPLSSLVNATIKTLLESYS DKYRLE  
ERD GALYLGWMNRDLVASC AWK-**

SIGRAS13

Solyc06g076280.1.1

Nucleotide sequence (ORF):

ATGGATCCTCGATTCAATCCGTTGTCTGATCCTGTAACACTTTTCGAGTTCGAAGATCAGATTAATTTGTCT  
AGCTATGAGGGATCTCTGAATCCTCCTCACAAATATAATGATGACTATGTTGCTTTTGGTGTCCGTATACG  
GCCCCAAGTGTAGACATTGGTAATTTGCCCCATCATCAAACGTGAGCTCGGAAGTGGACTCTCCAGATG  
ATCATGACTCTGATTTTCTGTTAAGTACTTAAACCAGATACTTATGGAGGAGAATATTGAAGATAAGCCC

AGCATGTTTCATGACCCGCTTGCTCTAAAAGCTGCTGAGAAGTCCTTATATGAAGCCCTTGGAAGTCGTA  
CCCTCCTCACCTATCATGTTGACCATCAGTTAGAAAAGCCCAAGCCCTGACAGCATTTCAGACTCCAG  
TGACCATAGTACAAGTAGTAGCAATGCTCATAGTAATTCATGGATCCTCACTGGATTGTTGATCCTGGAG  
AATCTAGTTTGTCTTTGCCTGTGGAGAGTCATCCATCAGAGTACTCCATCCAACCTTTGATGCAGAGTAACT  
CAGAGAGGTCTCATGGTTCTTTAAACAACATCAACAACCTTGAATGTCCATATGGACTCTTTTTAAATCCTA  
ATGCTCTTTCAAACATGTTTACTGATCGCGAGTCTATCTTACAGTTCAAGAGAGGGGTGGAGGAAGCTAA  
TAAATTCCTTCAAATGTTAGTCAATTTGTTGTTGATTTGGATAAATATACCTTTCTCCAAAGGTGGAAGA  
AGTGACCAAAGAGGCTGTGGTCAAGGTAGAGAAGGATGAGAGGAATCACTCACCTAATGGGACTAAAG  
GAAGAAAACATCAGTATCCTGAGGACAGTGATTTTGAAGATGAAAGGAGCAACAAACAATCAGCAATAT  
ATGTGGAGGAGGAGGCTGAGTTATCAGAGATGTTTGACAGGGTCTGCTCTGTACAGATAAAGGTGAGA  
CAATATGTGGTGTGCAAGTGTGAAATGCCAGTAGACAATAGTTTAGACCAGAATGGACAAGCACATG  
GATCAAATGGTGGAAACACTCGTGCAAAGAAACAAGGGACTAAAAATGAAGCTGTGGATCTAAGGACTC  
TCTTAGTTAGCTGTGCACAGTCTGTTGCTGCTGACGATCGCAGGACAGCATATGAACAGCTAAAGCAGAT  
CAGGCAGCATTGTTCTTCCATTGGTGATGCATACCAAAGGCTGGCCAGTGATTTGCGGATGGCCTTGAA  
GCCCCGTTGGCTGGCACTGGCACTCAAATATATGCTGCCCTTGCTCCGAAAAGATTACAGCTGCTGAGA  
AATTGAAAGCATAACCAGGTTTATCTTTCCGATGCCGTTCAAGAAAATATCAATATTCTTTGCGAATAAA  
ATGATCTTCCACACAGCATCTAATGCCAGGACATTGCATCTCATAGATTTTGGTATACTATATGGTTCCAG  
TGCCAATACTCATCCAGCTTCTCTCAGAGATACCTGATGGGCTCCAAAGCTTCGCATTACTGGAATAGA  
CCTTCCCAACCTGGATTGAGCCAGCAGAAAGCTTAGAACAGACAGGGAGCCGATTGGCAAAATATTGT  
GAGCGCTTTAAAGTACCATTGAATATAATGCCATAGCAACACAGAATTGGGAGAACATCAAACCTTGAGG  
ACTTGAACCTGCAAGTGGTGGAGACTGTTGCTGTGAACTGTCTTTTTCGTTTTAAGAACCTGTTGGATGAG  
ACAGTGATGTTGGACAGTCCAAGGGATGCAGTTCTGGGCTTAATTAGAAAGATGAATCCGGATATCTTCG  
TGCAAGCTGTAATCAATGGATCTTACAGTGCACCTTCTTTGCTACTCGCTTCAGGGAGGCCCTTCCATT  
ACTCAACTCTCTTTGACATGTTTGTGCTACCTTACCCCGTGGTATCAGAAGAGGTTGCATTTTGAACAA  
GAATTTTACAGACGCGAGGCAATGAATGTCATTGCTGTGAGGGTTCGAGAGGGTTGAGAGGCCTGAG  
ACGTACAAGCAATGGCAGGTTGCAATATGAGGGCTGGATTCAAGATTCTTCGTTGAACCAACAACCTCG  
TGCAGAAGTTAAGGTGCAAGGTAAAGGCTGGATACCTCCGCGATTTTGTGTTTGTGAGGATGGTAAATG  
GATGTTACAGGGTTGAAAAGGCCGGTAGTATGCGTAGCTCGTGTGGGTGCCAGCATAG

Amino acid sequence:

MDPRFIPLSDPVNTFEFEDQINLSSYEGSLNPPHNYNDYVAFGVVPTAPSVDIGNFAPSSNVSSSEVDSPDDHD  
SDFLFKYLNLQILMEENIEDKPSMFHDPLALKAAEKSLYEALGKSYPPSPYHVDHQLESPPDSIFQTSDDHSTSS  
NAHSNSMDPHWIVDPGESSLSLPVESHSEYSIQPLMQSNSERSHGSLNNINLNVHMDSFLNPNALS NMFT  
DRESILQFKRGVEEANKFLPNVSQFVVDLKYTFPPKVEEVTKAVVKVEKDERNHSPNGTKGRKHQYPEDSDF  
EDERSNKQSAIYVEEEAESEMFDRLVLLCTDKGETICGDVKCEMPVDNSLDQNGQAHGSNGGNTRAKKQGTK  
NEAVDLRLLVSCAQSVAADDRRTAYEQLKQIRQHCSIGDAYQRLASVFADGLEARLAGTGTQIYAALAPKKITA  
AEKLKAYQVYLSACPFKISIFFANKMIFHTASNARTLHLIDFGILYGFQWPILIQLLSEIPDGPPLRITGIDLPPQG  
FRPAESLEQTGSR LAKYCERFKVPFEYNAIATQNWENIKLEDLKLASGETVAVNCLFRFKNLLDETVM L D S P R D A  
VLGLIRKMNPDIFVQAVINGSYAPFFVTRFREALFHYSTLFDMFDATLPRGDQKRLHFEQEYFRRREAMNVIACE  
GSERVERPETYKQWQVRNMRAGFKILPLNQQLVQKLRCKVKAGYLRDFVFEDEGKWMLQGWKGRVVCASS  
CWVPA-

Nucleotide sequence (ORF):

ATGCAAGCATCTCAGGGACCTCAAAGGTCGTGTAGTGTACATAAATTGTACAATAAGCCAATGCAGCAAG  
TTCAGCAAACTACACCCCTTGCCGTGCTTCTGACAACAGCAATTATAATGATGGTAGCAACTCCCAGGCA  
CAGGTTTCTTTAACGACAGAGAATGAGAAGTTCTTCACTGTGGACACATTTCCGGCTACTGACTGTGCCAT  
CTACGATGGAGATCCTTCCGTAAGCGTCTCTTCCAACAGGAGTCCTTTCTTCTCAATGTTCTCAGTCGAA  
CATGTTTGAGCAACGTCGTTCTTACGAGAAAAGTCTGCTGGTTCACCTGTAAGTTTGTGTTGAGGAGTTGATG  
ACAGCAACGGGAAGAAGCATGAGCTGCGGGAAGTGAATAAAGTTGCTAAGGCCTGAATCCGATATTG  
ATGACAGCTGCAGTTGCTCATTAAATGGTGTAGTCTCAAACATTTTTCTTGACAAGGCGGAATCAAGTA  
TTGGACGTAGCCTCAAGATTGGACTTGAAAAGAGTTGCTTGTGCTGTGCTGAAGCAGTAGATGAAGCTG  
ATACCTCGACTGCAGAAGTTCTGATGGATGCTTTGGAGAAAAGGGTATCGGTTTATGGGGAACCTATGCA  
ACGACTGAGTGCATACATGTTGGAAGGTCTAAGAGCACGATTATTGCTCTCCGGGAGTAACATATACAAA  
AAACTGAAGTGAATGAACCAACTAGCTCAGAATTGTTGCTACATGCAAGTCTGTATCACATCACCCC  
TACTTCAAGTTGCTTATATGTCCGCAATGTTGTATAAGCGAAGCCATGAAGAATGAGAATAGAATCC  
ATATCATTGATTTTCAAATTGCACAGGGAAGTCAATGGGTGTTCTCATCCACTATCTGGCTCGTCGGCCT  
GGTGGTCCGCCATTTCTTCGCATCACAGGCATTGATGATTCCCAATCAGCTCATGCACGCGGTGGTGGACT  
TCAGCTAGTTGGCGAAAGGTTAGCGAGCATTGCCAAGTCTGCGGAGTGCCTTTGGAATCCATACTGCT  
GCATTGTCAGGCTGTATGGTCAAAGTCTAGAGAACCTAAGAGTTAGACATGGAGAAAGCCTGGCAGTTAACT  
TCCCTTACATGTTGCACCACATGCCAGACGAGAGCGTAAGCACTATGAACCATCGGGACCGCCTATTAAG  
ACTAGTCAAGAGCTTGTCTCCAAAATCGTGGCCTTAGTTGAACAAGAAATGAACACCAATACCGCCCCTT  
TCCTTCAAGGTTCCGTGAAACTCTAGATTACCACAAAGCAATATTGGAATCAGTCGATGTAATCGCCCCG  
AGGAATGACATGCAACGGATCAGATCAGAGGAGCATTGTATTGCACGGGATGTTGTCAATCTCATAGCAT  
GTGAAGGGGCTGATAGAGTGGAAAGGCATGAAGTTTTGGCAAGTGGAGGTCAAGACTTTTGATGGGCTG  
GATTTACTCCATGCCCCGCTGAGTCCATCGTTGCTGAGGCCATTAAGGTCATGTTGAAGGAGTATAGCTCA  
AATTATAAGCTTGCTGAAAGCCAGGGGGCGCTTTATATTGGATGGAACAACAGAGCTTTAGCAACTTCTT  
CTGCTTGGCAATTACCTCATTGCTGCCTTTGGGATCTTGA

Amino acid sequence:

MQASQGPQRSCSVHKLYNKPMQVQVQNYTPCRASDNSNYNDGSNSQAQVSLTTENEKFFVDTFDPATDCAI  
YDGDPSVSVSSNRSPFSSQCSQSNMFEQRRSYEKTAGSPVSLCSGVDDSNKKHELRELNKLLRPESDIDDSC  
SCSLNGVVSXKHFSLTRRNQVLDVASRLD**LKELLVACAEAVDEADTSTAEVLMDALEKRVSVYGEPMQRLSAYML**  
**EGLRARLLSSGSNIYKLLKCNPTSSELLSYMQVLYHITPYFKFAYMSANVISEAMKNENRIIHFQIAQGSQW**  
**VFLIHYLARRPGPPFLRITGIDDSQSAHARGGGLQLVGERLASIAKSCGVPEFHATAALSGCMVKLENLRVRHG**  
**ESLAVNFPYMLHHMPDESVMNHRDRLRLVKSLSPKIVALVEQEMNTNTAPFLPRFRETLDYHKAIFESVDV**  
**TRPRNDMQRIRSEEHCARDVVNLIACEGADRVERHEVFGKWRSRLLMAGFTPCPLSPSVAEAIKVMLKEYSSN**  
**YKLAESQGALYIGWNNRALATSSAWQLPHSLPLGS-**

SIGRAS15

Solyc10g074680.1.1

Nucleotide sequence (ORF):

ATGGCCAAGGCTTACCTGTGAGTGGTGAGAACTGCACCGGTGTGAACGTCGTCGGTGATAGTAGTGGT  
GAGAAGACAAGCAAGCAACTTTTCCACTGTGAAAACGGAAAAATGGTTAGGAAGAGAGCGGCGTCTGAC  
ATGGAGATCCAGACCGGCGCCGGTGAAGAGCATAGATATTTACGCCGCTGCTATGATAGGGGGTCT

CATTCTCAGTTGGTGATTCAAGGGTTTGTGGTAATAGTAATTTTGGTCATGGTATGAACAGTAATTTGAC  
AACGACGATGACGATGACGACTCAGGTTTCTAACTACTCCACTATGCAAATGTTACCTTCTCCACGAACCT  
GTGCGGTGTGACGTCAAGAGGAGGGCCTGGGATTGATACCGGATTTTCTAATCAACCCCAAACCTAACT  
TACACAGACGCCATAACATCGCATCATCAGCCACAAGGTAAGGACTCAAACCCAGAACAACAACAGTCAATCCCC  
ATCTGTTTGTGTTTTCTCCGGTCTGCCGCTTTTTCTCCAGATAGAAACCGCCAAAACAGTGGTTTACTACT  
GCAACAACCTCCTGCTGCTGCAGCAGCTGTTGTATCTTACCTCTTACAACCTGGAAGAATCGATTCCATGG  
AGGATAGTACGTCCGCAACGGCATGGATTGACAGTATTATAAAGGATTTAATCAACAGCTCCGCACAAGT  
ATCGGTGCCCCAACTCATAAGAAATGTAAGGGAGATTATCACCTTGCAATCCGTATCTCGCATCTCTTCT  
CGAGTACAGGCTTCGCTCTCTACTAGTAATAATAATGGCGGTGCTGATCAAAATGACCCCATGGAGTGC  
TGGAGAAGAAAAGAATCGCTTCCGGCACAGCTCGCTGGTTACAACAGGCCAAAATAATGCCAATTTAT  
TGCAGCACAATATTTTATCCCTTCTGATTCTCAAATAATCAATACTTAACTGGGATATAGCTTTGCCAA  
ACAGCCATAACGCTCCGGTAGCGCTTCTCATAACCAGCACCAGCAGCTAGGCGGCAATAATCCTACTGC  
AACAGATCTTTCATTTGTTACACTTCTCCTCAAGTGCAGCAGCAGCAACAACAACAACAAGAATCTC  
CCCATTCTCATTCTCAGCAACAGGCCGAGTAGACTTAGATCAACAACAGAAGCAGCAGCAATCTTCTAGT  
TCTCTATCTCCAACATCGGTAGCCGACAATAGCGCCAAAACAAAACCTTCAACCCAGCTCCACCAGTTCC  
GATCAACACGTACCGAGAAAAAAGGAAGAAGAACGACAACAGAAGAGGGATGAAGAAGGATTACACC  
TTCTGACCTTGCTATTGCAATGTGCAGAAGCCGTATCCGCTGATAATTTAGAAGAGGCAAATAAAATGCTA  
TTAGAAGTATCCGAACTCTCCACACCGTTCGGCACATCTGCACAGCGTGTTCAGCATATTTCTCAGAAGC  
CATGTCAGCAAGGCTGTTGAATTCATGCTTAGGAATATACGCAGCCCTACCAATGACCAGCGTCCCCATGC  
TTTACACACAGAAAATGGCATCTGCTTCCAGGTGTTAACGGAATCAGCCCTTTCATCAAATCTCACATT  
TCACAGCCAATCAAGCTATACAAGAAGCTTTCGAGAGAGAAGACCGGGTACACATAATCGACCTTGATAT  
AATGCAAGGTCTTCAATGGCCCGTCTTTCCACATCTTGGCTTCCAGGCCCGTGGACCTCCTTACGTTCC  
GGCTCACGGGGCTTGGAACTCGATGGATGCTTGAAGCAACCGGCAAACGACTATCCGATTTTGCCGA  
ACGATTAGGCCTTCTTTCGAGTTTTTACCAGTTGCTGATAAAGTTGGAACTTAGACCCTGAGAAATTGA  
ATGTGAGCAAAAGAGAAGCTGTAGCAGTTCATTGGTTGCAACATTCCTTTACGATGTTACTGGCAGCGA  
CCCTAATACTCTCCCTTACAAAGGTTGGCTCAAAGGTGGTGACGGTGGTGGAGCAGGATCTGAGC  
CACGCGGGTTCATTCTGGGGAGGTTGTAGAGGCAATACATTACTACTCAGCTCTATTTGACTCACTGGG  
CGCGTGTACGGGGAGGAGAGTGAAGAACGACACGTGGTGGAGCAACAACCTATTATCAAAGGAGATAC  
GTAATGTACTAGCCGTAGGAGGTCCATCAAGGAGCGGGATGCTAAATCAACAACCTGGAGAGAGAAGC  
TTCAACAATCTGGATTTAGATCCTTGTCTTTCAGGTAATGCTGCTGCACAAGCCACTTTTTACTCGGAA  
TGTTCCCGTCTCATGGATACACTTTGGTGGAGGATAATGGAACACTTAAGCTTGGATGGAAAGATCTTTGC  
TTGTTTACTGCTTCTGCATGGAGACCTAATTCATTGCATGCTGCACCAGGTTCTCGTCACTTCTCTGCCTCA  
ATATGGATTA

Amino acid sequence:

MAKALPVSGENCTGVNVVGDSSGEKTSKQLFHCENGMVRKRAASDMEIQTGAGEEHRYLRRPAMIGGSHS  
QVGDSRVCNSNFHGMNSNLTTMTMTTQVSNYSMTQMLPSSTNLCGVTSRGGPGIDTGFNSNTPNLTYT  
DAITSHHQPGTQTNNSQSPSVCVFSGLPLFPDRNRQNSGLLQPPAAAAAVVSSPLTTGRIDSMEDST  
SATAWIDSIIKDLINSSAQVSPQLIQNVREIHPNPNYLASLLEYLRSLTNNNGGADQNDPMECWRRKESLPA  
QLAGLQQAQNNANLLQHNILSLPDSSNNQYLNWDIALPNSHNAPVAPSHNQHQQLGGNNPTATDLSFVTL  
PQVQQQQQQQESPHSHSQQAQVLDLQDQKQKQSSSSLSPTSVDNSAKTKTSTPAPPVPINTYREKKE  
EERQQRDEEGLHLLTLLQCAEAVSADNLEEANKMLLEVSELSTPFGTSAQRVAAYFSEAM SARLLNSCLGIYA  
ALPMTSVPMLYTKMASAFQVFNGISPFKFSHTANQAIQEA FEREDRVHIIDLIMQGLQWPGLFHILASRP  
GGPPYVRLTGLGTSMDALEATGKRLSDF AERLGLPFELPVADKVG NLDPEKLNVS KREAVAVHWLQHSLYDVT

GSDPNTLSLLQRLAPKVVTVVEQDLSHAGSFLGRFVEAIHYYSALFDSLACGYEESEERHVVEQQLSKEIRNVL  
AVGGPSRSGDAKFNNWREKLQSGFRSLSLAGNAAAQATLLLMFSPSHGYTLVEDNGLKLGWKDLCLFTAS  
AWRPNSLHAAPGSRHFSRPNMD-

SIGRAS16

Solyc03g123400.1.1

Nucleotide sequence (ORF):

ATGGCCATTGAAGAACCTGAGCCTAATTCCAACCTCCGACCCCATATCAGAGTGGCTAGCTAGTACTTTATC  
CGATGTTCCATCCTTCTTCCATGAACCTTACAGTTATGCCGATGACTTAAATTTCTACGCGGACCCATGGTG  
GGTTCCTGATCAAGAGGATCAGATCGTTAATCACAACATCATCATCGACAATACTTGTAACCTATTCAACA  
TTAGCTCCCCAGTCAACACAGCTATTAACAATATCCCTTTGGAGCCCATCATTTTGGATCATCCACAGCCGG  
TGGATCTGTCTAAGAAAAGGAAAAAATCTGATCAAAATCCAAAGGCGTCAAAGAAGAATCATAAACTTCA  
GATTAATGAGGCAGCACATGCTCCTACTATAGTTGATCAAGAAGGAGTGCAATTAATAAATCAATAGGA  
CCGAAGAGAGTAACAACAGGAAATAACAGTAACAACAAAGAAGGAAGATGGGCAGAACATTTGCTCAAC  
CCCTGTGCTGCTGCAATCACTGTAGGTAACATGAACCGCGTGAACATCTGTTGTACGTTCTCCATGAACT  
GGCGTCATTACAGGCGATGCCAACCACAGGCTAGCTGCTCATGGACTCCGCGCCTTGACACATCATCTGT  
CTTCCCCTGGCTCATCATCAGCATCCTCTGGAATATTGGAGTTACTAATTTCTTCTTGCCAATCATAAATT  
CTTCAGGGACTCGTTGATTAATTTTCATCGACGTTAGTCCCTGGTTCCGAATCCCAATAACATTGCGAATTC  
ATCTGTTCTCAAATAAATTGGACAACAGGATCGGCTAAAGAACCTTCATATCCTTGATATTGGAGTTTCTCA  
TGGTTTTCAATGGCCAACCTTCTTGAAGAATTGACTAGGCGGTCAGGTGGACCGCCGCACTGGTTCGCG  
TGACCGTTATTACACCAACCACAGAAAACGGAGAATTGACAGGAACTCCATTTGTGATCGGGCCACCTGG  
CTATGATTTTTCTCGCAACTACTAGCCTATGCAAAGGCTATCAACATCAATCTACAGATCAACAGACTGG  
ATAATTTTCTTCTCAAACCTCAATCCCAAATCATAAATTTCTCATCTGATGAAACCTTAGTCATCTGTGC  
TCAATTTAGACTGCATAACTGAATCATACTATCCCGGATGATCGAACAGATTTATTGAAGATATTGAAGA  
GTTTGGACCCGAAAGGATTAGTTCTCAGCGAGAATAACACGGAGTGCAGCTGCAACAGCTGTGGGGACT  
TTGCGACCACGTTCTCAAGGAGAGTGGAGTACTTATGGAGGTTTTTGGATTCCACGAGTGTGCTACAA  
AGGGCGGGAGAGCGAAGAAAGGAGGATGATGGAAGGAGAAGCAGCAAAGGCATTGACGAACATGGGA  
GAAATGAATGAAAGAAAAGAGAAATGGTGTGAGAGAATGAGGAGCGCTGGTTTTGTAAGCGGTGTT  
TGGTGAAGATGCCATTGACGGAGCTCGGGCTTTGCTGAGGAAGTATGACAGCAATTGGGAGATAAGGGT  
GGAGGAGAAAAGATGGCTGTGTGGATCTATGGTGGAAAGGACAGCCAATTTCTTCTGCTCATTATGGAA  
GATTTAG

Amino acid sequence:

MAIEEPEPNSNSDPISEWLASTLSDVPSFFHEPYSYADDLNFYADPWWVPDQEDQIVNHNIIDNTCNFSNISSP  
VNTAINNIPLEPIILDHPQPVDLSKRRKSDQNPKASKKNHKLQINEAAHAPTIVDQEGVQLKKSIGPKRVTTGN  
NSNNKEGRWAEHLLNPCA AAITVGNMNRVQHLLYVLHELASF TGDANHRLAAHGLRALTHHLSSPGSSSASS  
GTIGVTNFSSANHKFFRDSLINFIDVSPWFRIPNNIANSSVLQIIGQQDRLKNLHILDIGVSHGFQWPTLLELTRR  
SGGPPPLVRLTVITPTTENGLTGPVFIIPGYDFSSQLLAYAKAININLQINRLDNFPLQNLNSQIINSSDETLLI  
CAQFRLHNLNHTIPDDRTDLLKILKSLDPKGLVLENNTECSCNSCGDFATTFSSRRVEYLWRFLDSTSVAYKGRES  
EERRMMEGAAKALTNMGEMNERKEKWCEMRMRSAGFVKAVFGEDAIDGARALLRKYDSNWEIRVEEKDGC  
VDLWWKQPISFCSLWKI-

SIGRAS17

Solyc02g085340.1.1

Nucleotide sequence (ORF):

ATGGCCTATATGTGTACGGACAGTGGGAATCTAATGGCAATTGCTCAGCAAGTCATAAAGCAAAAGCAGC  
AGCAGGAGCAGCTCCAACAGCAAGAGCAACAGCAGCAGCAGCAACAACAATTCTTGGGTGTTAATCCTTT  
GTGTCTCAGCCATGGACTTCCAATCACCAGACCTTAATAAGCCCCACTTTAGGATATGGACTTACCG  
GGTCGGGTTTTGCAGACCCATTCAGGTCGCCGGAGGAACAGATAGCGCCGAGCCGGGATTCAGTTCCC  
TAACTTGAACATCATTGACCGGGTTTAGGTTTGCTGATTTGCGCGGTGGACCGGGTGGTGAGTTTGAC  
TCAGATGAGTGGATGGAGAGCTTGATAGGCGCGGAGATTCTACCGGAAGCTCTAATCTTCAATCTGGTT  
GCGAAGCCTGGCAGACGAGTCCGAATTAACCTCTACGGAGATCCGTTCCCGAGTTGTCGAATCG  
ACTCAGTATCGTTCTGCTCCTCCGCCTCACCTTCTCCGATCTCAATGGGGTCATTTTTTCGAAACCCA  
GAAAAATCTAAGCCCACTACAACCACAGACATCTCCATGGGTGCGACCATCTTCACTCCTCCTCAATTGT  
TCAACCCGCGAGCAAAGAATCCAAGGTGGTATCAGTTGATGTGCAGCCATGTAGTCCCCTGAAAGTTTTT  
CGTCAAACCATTTGTTGAAATCCTTGGTGGAAATGTGCAAGACTCGTGAATCAGAGCCTGAAATGTAGT  
AAAATCATTGATTGACTAAGGAATCAGTTTCCAACAAGGAGATCCAATGGAGCGAGTTGGGTTCTAT  
TTCTTAGAAGCTCTTTACAATAGGCTTTCGTCGTGTCAAGCAGAGAGAAGTCCGTCATCTTTGGTACTGC  
GCCGGAGGAGCTCACTTTGCATACAAAGCCTTTAATGATGCATGTCCCTACTCAAAGTTTGCTCACTTAA  
CGGCTAATCAGGCGATTCTTGAAGCAACTGAAAAGCAACGAGGATTACATTGTAGATTTTGGAAATGT  
TCATGGTATCCAATGGGCAGCTTTTTTACAAGCTTTAGCAACTAGATCAGCTGGTAAACCAGTCAGTGTTA  
GAATCTCTGGCATTCCATCAGTGGTATTGGGTAAGTCTCCGTCAGCTTCACTTTTAGCTACAGGGAATCGT  
CTTCGTGACTTCGCGAAGCTTCTGGATCTTAACTTGAATTCGAACCAATATTGACTCCAGTTCAGGAACT  
AACGGGTCTAGTTTTCGAGTTGATCCAGATGAAATCTTAGCTGTGAATTCATGTTGCAGCTGTACAATTT  
ACTGGACGAAACAAATGTTGGTGTAAAACTGCACTGAGTTTAGCCAAATCATTGAATCCAAGCATTGTG  
ACATTGGGTGAGTATGAGGTGAATTTGAATGATGTTGGATTCTGCAGCGATTTAAGAACGCACTGAAAT  
ACTACTCAACTATTTTCGAGTCATTGGATCCGAGCTTGACCCGAGACTCCGCTGAGAGAGTACAAGTGGAA  
AAGACTGATACTTGCCCGGAGAATTGCCGGAGCGGTGGCCTAGACGATGGCGGAACCAGAAGAGAAT  
GTATGGAAGATAAAGAACATTGGAAGAATTAATGGAAGGGGCTGGTTTTAAACCAGTAACACTTAGCC  
ATTATGCAATGAGTCAAGCAAAAATCTTCTTTGGAAGTATAATTATAGTTCATCATTGGATTAATTGATT  
CTGCCCTGGGTTTCTCCTTGGCTTGGAAAGATAATCCCCTTTGACTGTTTCTTCATGGCACTAA

Amino acid sequence:

MAYMCTDSGNLMAIAQQVIKQKQQEQLQQEQQQQQQFLGVNPLCLSPWTSNHQTLTNSPTLGYGL  
TGSGFADPFQVAGGTDSEAPGFQFPNLEHHSTGFRFADFGGGPGGEFDSDEWMESLIGGGDSTGSSNLQSGC  
EAWQTSSEFTTLYGDPFPSPNRLSIGSAPPPSSDLNGVIFSETQKNLSPLQPQTSPPWVAPSSPPPIVQASK  
ESKVVSVDVQPCSSPESFSSKP**LLKSLVECARLAESEPENNVKSLIRLRESVSQQGDPMERVGFYFLEALYNRLSSC**  
**QAERTPSIFGTAPEELTSLYKAFNDACPYSKFAHLTANQAILEATEKATRIHIVDFGIVHGIQWAAFQLALATRSAG**  
**KPVSVRISGIPSVVLGNSPSASLLATGNRLRDFAKLLDLNFEFEPILTVPQELNGSSFRVDPDEILAVNFMQLYNLL**  
**DETNVGVKTALSLAKSLNPSIVTLGEYEVNLDVGFQRFKNALKYYSTIFESLDPSLTRDSAERVQVERLILGRRIA**  
**GAVGLDDGGTRRECMEDKEHWKELMEGAGFKPVTLSHYAMSQAKILLWNYNYSSSFLIDSAPGFSLAWKD**  
**NPLTVSSWH-**

SIGRAS18

Solyc01g008910.2.1



Nucleotide sequence (ORF):

ATGTTACAAGATGATGGTTCATCATCAGTGACTTCATCATCACCCTTCAAATTTCCAATGATGTCAATT  
TCACCTAGCTTTGTTGGTGGTGGTGGTCCACATATCAGTGGCTTAAAGATTTGAAATCTGAGGATAGAG  
GTTTGTATCTGATTCACCTTTGCTTGCTTGCTAATCATGTAGCTAATGGTAATCTTGAAAATGCTAACA  
TTGCACTTGATCAAATCTCCTATCTTGCACTCCTAATGGAGATACAATGCAACGAATCGCCTCGTATTTCCG  
CTGAATCACTTGCTGATAGGATATTGAGATCTTGGAAATGGGATTTACAAGGCGTTGAATTCGACTAAGTT  
GAGGGTTGTATCTGAGGATATACTTGTAAAGAAGATGTTTTTCGAGTACTTTCCGTTCTTGAAAGTAGCTT  
CTGTGATCGCTAATCAAGCGATCATAGAAGCTATGGAAGGTGAAAAAATGGTTCACATTGTTGATCTTAAT  
GCTTCCGAGCCTTTACAGTGGCGTGCGCTCCTCAGGATTTGAGCGCACGCCCTGAAGGACCCCCGCATTT  
GAGGATTACGGGGGTCCATCAACAAAAACAAGTGTGGAACAAATAGCACATGTTCTAACAGAGGAAGC  
TGAAAAGCTTGATGTCCCTTTTCAGTTTCATCAAGTAGTTAGTAAATTGGAGAATCTTGATATCGAAAAGC  
TACGAGTTAAAACCGGGGAGGCGTTAGCGATTAGCTCGTTATGCAATTGCATACTCTTCTGCACATGAT  
GATGAACCCCAAAAGAAATCCCCTTTGGGTTTTAAGCATTTGAATGGTGTTCATTTGCAAAGGGCAACT  
AAACCAAAACACTCTAGGGGATTTGCTCGAAAACGAGATGATGACTCATAGTGTTTTTAGTCCGGGCAAT  
GAATCAGCATCCTCATCTCCGTTATCATCGAGTGCATCAACAAAGATGGAAGGATTCCTCCACGCGTTGTG  
GGGGTTGTACCAAAAGTTCATGGTGGTTACAGAACAAGACTCGAATCATAACGGTACAACCTTATGGAA  
AGGCTATCCGAGTCGTTGTATTACTACGCTGCATTGTTGATTGTCTCGAGTTCACACTACAGAGAACATC  
GTTAGAGAGGTTAAAGTTCGAGAAAATGATGTTTGGCGAGGAGATTAAGAACATTGTAGCGTGTGAGGG  
AGGTGAACGTAGGGAGAGACACGAAAAGTTGGATAAATGGTTTCAAAGACTCGATGGAGCTGGTTTCAT  
GAACGTGCCTTTGAGTTATTACGCGATGTTGCAAGCAAGGAGATTGTTGCAGAGCTATAGTTGTGAAGGA  
TACAAGATTAAGACGAGAATGGTAGCGTGGTGTCTGTTGGCATGATCGCGCGCTCTTCTCAGTCTCAG  
CGTGGAGATGCAGGAGGTGA

Amino acid sequence:

MLQDDGSSSVTSSSPLQNFPMMSISPSFVGGGSPYQWLKDLKSEDRGLYLIHLLACANHVANGNLENANIA  
LDQISYLASPNGDTMQRIASYFAESLADRILRSWNGIYKALNSTKLRVSEDLVKKMFPEYFPFLKVASVIANQAI  
IEAMEGKVMHVIDLNAEPLQWRALLQDLSARPEGPPHLRITGVHQKQVLEQIAHVLTEEAEKLDVFPQFH  
QVVKLENLDIEKLRVKTGEALAISSVMQLHTLLAHDDEPQKKSPLGFKHLNGVHLQRILNQNTLGDLLNEM  
MTHSVFSPGNESASSPLSSASTKMEGFLHALWGLSPKVMVTEQDSNHNGTTLMERLSESLYYAALFDLCE  
FTLQRTSLERLKVEMMFGEIKNIVACEGGERRERHEKLDKWFQRLDGAGFMNVPLSYAMLQARRLLQSYS  
CEGYKIKDENGSVVICWHDRALFSVSAWRCRR-

SIGRAS19

Solyc01g009840.1.1

Nucleotide sequence (ORF):

ATGTTGACTGGTGTCTTCATCATTGGACTTGCCTCAAGCACATCATTTGCCTAATAACCAGTGGGACGAT  
GATGCAGCTGAGCTGATCAGCTTACTTTGTGTTGAAGCAATTGGCTCAAGGAATGTTACTGGTGTAAATCA  
ACTGATAGCTAGGCTAGGGCGGCTTGCCTATCTAAGAGGGTCTCCAGATTTGGTCTCAAATTTTCATATTA  
TACCCACTCAGGTTCTCGATTGTTTAGATGTTTTAGCAGTACGGTATTGAGGCTGTTGAATCAGGTTAGG  
CCAATTTCAAAGTTTATCCATTTTCATCAAATGAGATTATGGTTAGAGCTTTTGAAGGCAAGGACCAGGC  
TTACATTATTGATTTTGATACTGAGCAAGTCTGCAGTGGCCTAACCTGTTTCAGAGTTTAGTTTCTAGGCA  
CAAACCCCTCCCAAATTCATGTTAGAATTACTGGTATTGGAGAATCAAAGCAGGATCTTGGCATTGATC  
TATGGATGCATCATGTAAGAGGGGGAAAATGTGCGAGTCTTCCATTGGACAGCCCTGGTAGGATTTAA

GACAGAAGAGTTGTTTGTCTCGGGATATTAGAAACATTATCGCCCGTGAAGGACGAGATATGATTGAAAG  
GCATGAATATTTTGGTAAATGGCGGAAGTTGATGGAACAAGGGGGTTTCAAATGCACAGGGATTACAG  
AAAGGGAAGTCTTCAGAGTCCAATTCTGTTGAAGATGTACTCATATGA

Amino acid sequence:

MLTGCSSSLDLPQAHLPNNQWDDDAE**LISLLCVEAIGSRNVTVGNQLIARLGRLAYLRGSPDLVSNFHIIPTQ  
VLDCLDVSSTVLRLLNQVRPISKFIHFTSNEIMVRAFEGKDQAYIIDFDTEQVLQWPNLFQSLVSRHKPPSQIHV  
RITGIGESKQDLGIDLWMHHVKEGENVAVFHWALVGFKTEELFARDIRNIIAREGRDMIERHEYFGKWRKLME  
QGGFQMHRDVRKGTASESNSVEDVLI-**

SIGRAS20

Solyc01g059950.1.1

Nucleotide sequence (ORF):

ATGAAGTGCCCTTTTCTTTAATGCAGTGGTGTGAGAAATGAAGGACCTGAGTAAAAATCTCTTTGAGTT  
AGATACTAATGAAGTTGTGGTAGTTACTCAGAGTATGTTCTTGGAGGCATGTTAACATGGCCTAATCACC  
TTGAAGTTGTTCTAAGATTCATTGAAAGCCTCAATACTTGTGTGATAATAGTCATCGAAACTGAGGCAAAC  
ATTAACGAGCCAATATTTATGGATCAATTAATGAATCAGTGTCTGTATGCTACACTCTTTGATTGTTTG  
GAGACATTCATGGGCCGAGACAATCAGCACAGGATGGAATTTGAAAGACTGGTTCTTAGAAAAATCATTG  
ACAATGTGATCACTTGTGAAGGAGAAGGAAGGATCTCCACAACGTCAGGCTGGAAGTATGGAGGGCTT  
TGTTTAAAAATTTGGTATTAAGGAAACAGAATTGAGTGAATTATCCTTGTACCAAGCAAATCTAATAGTC  
GATCGATCTGCTCATGGCTTTTCACTCTGGATATGGATGGAATTGCCTTACTATTAATGAAAGGAAC  
TCCAATAGTATTTGCTCAGTACTTCTGTTCAAAGAGTTGTGTATTACTTCTGTGAATCTCTCAAGAGAGA  
ATTGATAAGGAGAAGGGAACATTATCACCTAATAGACATGAAGGTTGGGAAGAGAAACCATTGATTTG  
GACAAAGGTTCTGCAGAATGCGAAGCCTATTGCAGTTGTATGCTATCAATCATCACCTTTCTCCAAGTGC  
CGCAATTTACTGGAATCAAGCCATCATAGATAATGTCAAGTCAGCAAAGGAGGGGTTCAATTTGA

Amino acid sequence:

**MKCPFFNAVVSEMKDLSKNLFELDTNEVVVVYSEYVLGGMLTWPNHLEVVLRFIESLNTCVIIVETEANINEPI  
FMDQFNESVFLYATLFDCLETFMGRDNQHRMEFERLVRKIIHNVITCEGEGRIFHNVRLEVWRALFENFGIKET  
ELSELSLYQANLIVDRSAHGFCTLMDGNCLTIKWKGTPIVFAVSVLLFKELCITSVNLFKRELIRRRREHYHLIDMKV  
GKRNHLIWTKVLQNAKPIAVVCYQSSPFFQVPQFTGIQAIIDNVKSAKEGFI-**

SIGRAS21

Solyc01g059960.1.1

Nucleotide sequence (ORF):

ATGAAAGCCTTGTTCTTGGATTACACATTGTCTTATATGAATCTGACATCCTTATATTTCAAGATGGCAACA  
GCCAAGAGGACAACCTGTGAGCATTTTATTATCTGTTTTAAAAAAGAAAACCTCCAAGGTATCGCCGTCC  
TAAGATGGTTCTATCGACAACAACCATCATGAAGATTGCCAAAGAACAATAAAACCTTATACCTCACAGA  
ATCACGATGCATATTCATTATTTTAGTCTTTAATTGCGGATTTGGGCCTTCTCCTCAAGTTACAGAGG  
AAGTGGAGCTCGTCTACTGCTTTTAGTTCCGCTGAAATGCTAGCCAATCGACAATTAGATTGTGCAAGA  
AAGTTGTTGAACCTATGCATCAACTTTTCTCTTTCAGCTGGTAATCCAGTTCAAAGAGTTGTCTATTATTTG  
CTGAATCTCTTCAGAAGAGGATCAATAAAGGGACAGGAATACCAACTATAGCAGCAAAAATTGATGCAGT

GAATCAAATATTATGGAAGATGTTCTCATGGATCCACGAACCGATGTTATTGAGACTGAACAAATGCTTC  
CCTTCCGCAAAGTAACTCAATTTACTGGAATTCAATCCATCTTGGACAGTGTTAAATCATTCAAGAGGATTC  
ATTTAATTGATTTTGGGATAAAAAACCGATCACAATGGACAATCCTTATGCAAGCTCTGGTTGGTAATGGA  
GAATGTCCACCGAACATCTCAAGATAACAGCAGTTGGAACCTCTTTGATTGCAATGCAAGAGGTAGGAA  
AGAGATTGACATCTTTTGCAGACACCTTACATATACCTTTTTCTTCAAACAGTTGTATCTGACTTGAGAC  
ATATCAACAAGGATTTATTCGAGTCAAAGGTTGGTGAAGTTGTGGCAATCTATTCTGACTCACGTCTTTGG  
ACCTTGTTAGCATGGCCTAATCACTTGAATCTCTTATACAAGTTTGCAAAGTTTGGATCCATGTGTAATG  
GTGGTAACTGAAATAGAGGCAAATACTAATACACCAATTTTCATCGATCGTTTCAATGAAGCATTGTTTTA  
CTACAGTGCTATCTTTGATAGTCTTGAACCTTGCATAGGGTGAACCATCAGTATAGAGCAGTAGCTCAA  
GGAGTGATATACGAAGGATTATTGAAAATGTAATTACATCCGAGGGAGAAGAGATGGTACATCGCCAT  
GAGAAGCTTCGATCTTGGAGGACGTTATTTAAAAATTTGGTATAGAGGAAGCAGAACTGAGTCACTCAT  
CCTTGTACCAAGCAAAGTTGCTCGCAGAAAATTCTACATGCCATGGGCTTTCAGTCTAGAAATGGATGG  
GAAGTCTCTAATTATTAATGGAAGGGAACCCCAATTAAGTCACTTCTGCATGGAAGTCCACCAATAA

Amino acid sequence:

MKALFLDYLSYMNLSLYFKMATAKRTTVSIFIICFKKRKPPRYRRPKMVLSTTTIMKIAKEQLKLYTSQNHDAYSI  
IFSPLIADLGLSPQVTEEVELVLLLLVSAEMLANRQLDCARKLLNLCINFSLSAGNPVQRVYVYFAESLQKRINKGT  
GIPTIAAKIDAVNPNIMEDVLM DPRTDVIETE QMLPFRKVTQFTGIQSILDSVKSFKRIHLIDFGIKTGSQWTILM  
QALVGN GECPEHLKITAVGTS LIRMQEVGKR LTSFADTLHIPFSFKTVVSDLRHINKDLFESKVG EVVAIYSDSRL  
WTL LWP NHLQSLIQVCKSLDPCVMVVEIEANTNTPIFIDRFNEALFYSAIFDSLETICIGWNHQYRAVAQGV  
YIRRIENVITSEGEEMVHRHEKLRSWRTL FKNFGIEEAE LSHSSLYQAKLLAENSTCHGLCSLEMDGKSLIWKWG  
TPIKLSAWKFHQ-

SIGRAS22

Solyc01g079370.2.1

Nucleotide sequence (ORF):

TCATATACAACAAGAATCCATTCAATTTTTTTCTAGCTCTTTTCTCATGGATCTTTTGC AAATTTATTTA  
GAGAACCATTTCAATTTTTTACA ACTATTCTTCTAGTCTTCTTTTCTCTTTTCTTTTCTTATAATTTCTAGGC  
TATCTGTTGCACATTATCTTATTGATCTTGTAGGTTATTCAAAAACAGAAATTTCAAATAATTGTGATTTACT  
AATCAAATTTTTCTCAAGTTAACCTATTTTTCTACATGTTCTTGTCTATCATCAGTGTGCTGCACTTT  
CTCATACCTTAACCGGTGGTACCTCTTGCTTCATCAAGCGTACCCAGAGCCCGTCTCGAGACTTCGATTAT  
ACACCGCGTGGTTTTTTCGTATGCATATTGCAAATTTGTGTTGGTTTAGGCATTGAAGGTAGTATAGCTGCT  
GGAGTTGATGCTTATGAAATTGGTTATGAAAGGGGATTTTTGACAAGAGCTATATTCTTCTGGGATTA  
TGAGACAATGTTCTTTTGGTCCAATATTTTTGTGAAGCCAGTGGTGGATGACACAGTTTTTGGCATTCTAC  
AAGAAAATAGATGGATTGAAAAGGCAGCATTGGCAATGAGTTTTGGTGGACTTTGGTGGTGGAGATTGA  
GAGATGAAGTTGAGTTTTTAGTGGTTGTGGTGGAGAAAAAAGAGACTTGTGATTAGTATTGGATTGGC  
TGATTTTGTGGTTGGTGGTGTATTATTTAACTGTTACAATTGGTATGATCAAATTTGAAAACCTTTGT  
TTGGCTGTTTATGTAATGTTTGGTAGAAGAGTTGTTGATTTTGACAATACTGATGGTACTCTAGGAACA  
ATGATGAGAAGGATGATCAGTTTCATCTTAAAGGATATGAGAGAAGTGAGTTAGTGGTCAATGGTATTGA  
AGAAGGTTGTGTAGATATTGATTCTGTACTCCATTTGTGGACATAACAATGAAGAGAATACATCTGATG  
ACAAGTTAGAACCAACTTATTGGAAGATCAGCAACAAAGCCTATCAGATTGGACGCAAAATCATTTCTC  
ACCAACACAGTCATGCCCTTGAACCGGTCCAAATCCAATCTACTATTGAAGCACCAACAAATGATGATTT  
CCCGCTCAAGTACCAGCACCTGCCAACTCTAGCAATGAAAAACCAAAGCCGTTTTTCATTAGCATCTTTGG

AGCTACTGAGCAATTATGGCAGACTGAGCAAGAAATCCAGTGAGGAAAACCTTGTGACTAATGCACTAAG  
TTGTGAGGCTCACTTAGAGAATAGCCACAAGTTGCCAATGAAAGAGATCTTGAGGGCTGCAGGAGAAAAG  
GTACATACAGTACTCCACCCAAAGGCTAGATGGTTTTCTATGTTTATTCACCCCTTATGGTTCGGCACTCTC  
AGGCCTTTGTATGGAGGAAACAAGGGATGTGGAGCTTGTCCACCTCCTCCTAGCTGCAGCAGAAGAAGT  
GAATAATCAACAATTCCATCTAGCTAGCAAATTGATTTCTCGTTGTATGTGGGTGGCATCTGATTCAGGTA  
ATCCAGTCCAGAGACTTTTCTACTATTTTGTAAAGCTTTAGAAGAAAGGATTGATCGATCAACTGGAAGA  
TACACATGTACGGATGAAGATCACCACTCAAGTATATTAATAATTATGTCATTAGGTACCAACTCTGCATT  
TTGACCTGCCACCAACTAATTCCTTTCAGTCAAGTGATGCAATTTGCAGGAGTTCAAACAATTGTTGAAAA  
TGTCAGAAGCGCAAAAAAATTCAATTTGATTGATTTTAATATCAGAAGTGAATTGATGGATAGTCTTGA  
TACAAGCTCTTGCAAAAAAGGTGACAGTCCAATTGAGCTTCTAAGATAACTGCAGTTGGAAGCATAGA  
AAAAGAGAAGTTTGAAGCAACAAGCAACACATTACACAGTTTCACCAAGTCTTAGGCCTGCCATTTTCAT  
TTGATATAGTTTTGTCTCGGACATGAAAGATTTCAAGAAAGAGTCGGTCAATATTAACACAGATGAGACT  
GTGGCTGTTTACTGTAECTATACTAAGGACAATGCTATCAAACCAGATTGTTTGGATAATTTGATGAA  
AGTAGTCAGAAGTATTGGACCAACAATTATTGTTGTTGGCGAAGTTGAAGCAAACCATAATTCACCATCAT  
TTTTAAACCGCTTTATTGAGACTCTTTTCTTTACAGTGCATTTTTGATTGCTTCGAGGACTGCATGGATCG  
ATGCAGTCCATGTGCAACAACGATTGAAGGGGTATATTTGGTGAAGGTATTCGGAACATCGTGGCGGT  
GAAGCTGAGGACAGTTACCAGGAATGTGAAGCTTGAAGTATGGAGAGCGTCTTTGCAAGGTTTGGT  
ATGGTGAAGAAGAGCTTAGTGAGTCAGCTTGGTATCAAGCTCATCTGATTCTCAAGCAATTTGCCAAG  
GAAGTTCTGTGATCTTCAAAGGATGGGAAAGGCCTCATTATTGGGTGGAAGGGAACCAATTCATTC  
TCTATCCATTTGGAAGTTCTTGTA

Amino acid sequence:

MDSFANLRFEPFQFFTTILLSLLFPLSFLIISRLSVAHYLIDLVGYSKTEISNNCDLLIKFFLQVNPFLHVLVSIISVAAL  
SHTLTGGTSCFIKRTPEVPSRLRLYTAWFFVCILQICVGLGIEGSIAGVDAYEIGYERGFTRAIFLGLNETMFFW  
SNIFVKPVVDDTVFGILQENRWIEKAALAMSFGLLWWWRLRDEVEFLVVVVEKKRDLLISGLADFGVWVWLY  
LTVTIGMIKIVKTLVWLVYVMFGRRVDFDNTDGDSRNNDKDDQFHLKGYERSELVNGIEEGCVDIDSLSYIC  
GHNNEENTSDEQVRTNLEDQQSLSDWTQNHFLTNTVMPLQPVIQSTIEAPTNDFFPPQVPAPANSSNEK  
PKPFLASLELLSNYGRLSKKSSEENLCTNALSCEAHLENSHKLPMKEILRAAGERYIQYSTQRLDGFMSFIHPYGS  
ALSGLCMEETRDVELVHLLAAAEVNNQQFH**LASKLISRCMWWASDSGNPVQRLSYFFAKALEERIDRSTGRY**  
**TCTDEDHHLKYIKIMSLGTNSAFLTCHQLIPFSQVMQFAGVQTIVENVRSAKIHLIDFNIRSIQWIVLIQALAEK**  
**GDSPIELLKITAVGSIEKENFEATSNTLHSFTKSLGLPFSFDIVFVSDMKDFKESVNIKTDETVAVYCNSILRTMLSK**  
**PDCLDNLMKVRSIGPTIIVVGEVEANHNSPFLNRFIETLFFYSAFFDFEDCMDRCSPCRTTIEGVYFEGEIRNI**  
**VAAEAEDRFTRNVKLEVVRAFFARFGMVVEELSESAWYQAHILKQFAQGSSCDLQKDGKGLIGWKGTPIHSL**  
**SIWKFL-**

SIGRAS23

Solyc01g079380.1.1

Nucleotide sequence (ORF):

ATGAATAACAACAAGAAGAACTGAATGAGCATGCTGCCATTCTGCAGGTCAGTTAAGTCGAGGAAAA  
ACAAAGCTCAACAATCTAGAAACAGGAAGCAATGTGGAGGAGGTACCTTTTCTATCTCTAGCTCCTTTTGA  
ATTGTTGAGTAAACATCCGAGCAGGTGCAGGAGAAGAGATAAAGTTAGAGATGTGAATGGCGGAGCCA  
ACATGCACCAGAAGCTCTCAGCTACACAAATCATGAGGCTAGCCGGAGAAAGATTCATCCAGTTCTCTTCC  
AACAAAGTTCATCAACATAACAATCTTTTGCACCCCTATGGTTCTGCTTTCTCAGACCTTTCTCCTGAAGAT

AATCAAAATGTAGAACTTGCTCAAATCCTCCTAGCTGTAGCTGAGAAAGTTTCTGACCAGCACTACGATCG  
TGCAAGGAAATTTCTGAGTCAATGCCAACTACTTGCATCAAACACAGGTAACCCTGTGCAAAGAGCAGTC  
TTTTATTTTGCACAAGCACTTGGAGAGAGGATCGATAGAGAAAACAGGAAAATTAATGCCAAAAATCTGCA  
CGGAGACAGATGAACTTAACAGTATCTGTGTTGCATCAAGATTCCATGCCTCATTCTGATCATTACATCAA  
GAAGTTCCATTACCCAAATAGTGCATTTACAGGAATCAAGCCATACTAGAAAAGTGTAGCAATGAAACC  
CAAAGTTCACCTAATTGATTTCTTATCAGAACAGGGGTACAATGGGCATCCTTGATCCAAGCAGCAGCAG  
AGAGAAAAGACAACCCAATCGAACATATGAAGATCACAGTTATCGAATCAGTCAATAAAGAAAGAGTAAT  
AGAAACAGGCAAGTCTTTAGAGAGTTTCGCTAATTCCTTGAACCTCCCCTTCTCATTCAAGATCATCTTTT  
ACCAGATAGAAACCAACTGACCGAAGACCCTTCGACATAAAAACCTGACGAAGCAGTAGTAATCCATGCA  
GCATTCTTTCTACGAGCAATGATCAGCATACCCAAGTGTGAAACTGCAATGAGAGTTGTAAGAAGGCT  
ACAACCATCACTAATGGTAGTATCAGAAGTAGAGGCAAATCTGAATCACCTCTATTCGTGAACCGATTCA  
TAGACACTTTATTCTACTACAGTGCATTATTTGATTGCCTGGAAGATGTAATGAAGCGGGATGATCAACAC  
AGGATGACACTGGAAGTGCATACGGAGCAGGGATTCGGAACGTAGTAGGAAATGAAGGGGAGGAAAAG  
GGTCATTAGAAGTGTGAATCTTGATGTGTGGAGATCATTCTGAAGAGGTTTGAATGGAGGAAGTAAA  
GCTAAGTGACACATGTTTGTATCAAGCTAATTGATTATCAACAGTTTGCTTGAAGAATTCTTGCAAGTGT  
GGATGTTAACAGAGGGTCTTTCATGATCAGCTGGAAGGAACTCCAATCTATTCCACTTCTGCTTGGAAT  
TCCATTGA

Amino acid sequence:

MNKQQEELNEHAAHSAGQLSRGKTKLNNLETGSNVEEVPFLSLAPFELLSNNPSRCRRRDKVRDVNGGANM  
HQKLSATQIMRLAGERFIQFSSNKFININLLHPYGSFSDLSPEDNQNVE**LAQILLAVAEKVSDQHYDRARKFLS**  
**QCQLLASNTGNPVQRAVYFAQALGERIDRETGKLMPKICTETDELNSICVASRFHASFVALHQEVPFTQIVHFT**  
**GIQAILESVMKPKVHLIDFLIRTGVQWASLIQAAAERKDNPIEHMKITVIESV NKERVETGKSLESFANSLNFPF**  
**SFKIIFLPDRNQLTEDHFDIKPDEAVVIHAAFFLRAMISIPNLETAMRVRRRLQPSLMVVSEVEANLNSPLFVNR**  
**FIDLTFYYSALFDLEDVMKRDDQHRMTLEVSYGAGIRNVVGNENGEERVIRSVNLDVWRSFLKRFGMEEVKLS**  
**DTCLYQANLIQQFACKNSCSVDVNRGSFMISWKGTPYIYSTAWKFH-**

SIGRAS24

Solyc01g090950.2.1

Nucleotide sequence (ORF):

ATGAAGGGGATGCCCTTACCCTTTGAATTTGAGGGGAAGGGGGTGTAGAATTAGACGTTTTGTTCAATAA  
AGATAGTATCTTGAATCTTGGAGTAACCACAATACCAGCAAAGAAAGTAGTAGTTGTTGTTACTTTGTTAAAT  
AGTCCAAGTGCTGCTGGATACTATAAGGAGTCCAAGGCCTATTAATTCCTCTTCAACACTGTCTTCATCTTT  
GGTGGTGGTGGTGGTGGTGGAGGCACTGCTCCACAGACACTGCAGGAGGAGGTGTGGCGGCAGTTTC  
TGCAAACCCATCTTCTAAATGGCAGCAGCAGCAAGACAATACTACTGCTACAAGCTCCAATGTGGGAGC  
TGAATCTGAGCTTCAACAAGTTCAACCCCATCTTCTCTTGAGATGGGTGCTGCTGCCACGGGAGGGGATAA  
ATGTGCTATGGAGGAGTGGGAAGGAGGGTTATCAGAGTCGTAATGGCTTACCTTGCCAAGAACAGTCTA  
TACTAAGGTGGATCATGGGAGATGTCGATGACCCATCCATGGCTAATTGAATAAGGTGTTGCAGGTTAGTG  
GTACAGGGGACTATGAATCAATGGAGGATTTGGGGTTGTGGATCAAGTTTTGGTGTAGACCCAGTTGGC  
CAAATGGTAGTTTTATGCCTGCAATTAGCTCATCTGTTTCTATGTCAAGTTCAAGTTTTCTACCAACAGAAT  
GAACAGTGACAAGATTGGCTTGGTTTCTAACCCACCCACAAATCTCCCTCAAAATCCAATCTTCTCATTG  
TCTAACAAATCTGGGCCAATTGCATTTGGCCAGACACAGCAACAGCCGTTTGAGAGCACTGATTTGAAGCCT  
CATGCTTCAATCACAGTTCTTGATAAACCAGCACCAACACAGATTCTCAGAACCATCGTTTCTTTTGC

CACTACCATTTGCACAACAGGAACAAAATCTTGCCTTGCCACCGCAGGCGAAACGACACAACCCCGGGACC  
ATGGGAGGGCTTGAACCGGGCTCTCAGATCTCAAAGGATTGTTTCTAGATGCAGGGCACCAGCAGCCAAC  
ACCATCTCAGGGGCTTGCTCATCAGCTCCAGCTACTTCCCCATTTTAGGCCAGGAGCAATGGGGACAAAGCC  
AAAGATGGTGGGGGAAGAAATGGCTCAGTTTCATCAACTACAACAACAGCAGCAGCAGCAACAACAAGCG  
ATTATTGACCAGCTATTCAAAGCTGCAGAGCTGGTCCAGACAGGGAATCCGGTACTCGCGCAAGGGATATTG  
GCGCGGCTCAATCACCAGCTCTCTCAATTGGTAAGCCTTTCTATAGGGCTGCTTTTTATTGCAAGGAAGCTT  
TACAATTGCTACTCCATGCCAACACCAACAATTGAACCCATCAATGGCCTCTTCGCCTTTTAGTCTCATTTTC  
AAGATTGGTGCCTATAAGTCCTTCTCTGAGATCTCACCAGTTGCACAGTTTGCTAATTTTACTTGTAACCAAGC  
CCTGCTTGAGGTCTTGGATGGGTTTGAAGAATTATATTGTAGATTTTCGATATCGGTTATGGCGGGCAATGG  
GCCTCCCTTATGCAAGAGCTTGCTTGAGAAGTGGTGGCGCACCTACTTTGAAAATAACTGCATTAGCCTCA  
CCATCCACATGACCAGCTAGAGCTTGGACTCACCAGAGAAAATTTGATCCATTTTGTAGTGAATCAATA  
TGGCATTGAGTTTGAATTTTAAGCATTGATTCTTTAAATTCAACGCATGGTCACTGCCTCCTTTAGTCTCA  
GAGAATGAGGCAATTGCTGTCAATCTCCAGTTAGCTCGCTTTCGAGCTATCAGTTGTCCCTCCATTGGTTC  
TTCGTTTTGTGAAGCAGTTGTACCTAGGATTGTGGTTTCTGTGGATAGAGTTGTGACCGGACTGATCTAC  
CATTTCAAACCATGTAATCAAGCCCTTCAGTCTACTCAAATCTTCTGAGTCACTAGATGCTGTAAATGTG  
AATTTGATGCCCTCCAAAAGATTGAAAGTTCTTGTCTCAACCAGGAATTGAAAGAATTGTAATGGTTCGT  
TTTCGATCTCTGAAAAGACGCAGCATTGGAGTCACTGTTTTTTGTCATCTGGATTGCCCCATTATCTCTCA  
GCAATTTTACAGAATCACAGGCCGAGTGTGTAGTCAAGAGGACTCCTGTTAG

Amino acid sequence:

MKGMPLPFEFEGKGVLELDVLFNKDSILNWSNHNSTKESSSCCYFVNSPSAVLDIRSPRPINSSSTLSSSLGGG  
GGGGTASTDTAGGGVAAVSANPSSKWQQQQDNTTATSSNVGAESELQVQPPSSLEMGAAATGGDKCA  
MEEWEGGLSESVMASPCQEQSILRWIMGDVDDPSMANLNKVLQVSGTDYEFNGGFGVVDQFGVDPVG  
QIGSFMPAIISSVSMSSSSFPTRMNSDKIGLVSNPPTNLPQNPFIPLSNNLGPFIAGQTQQQPFESTDLKPHA  
FNSQFLINQHQTQIPQNPFLPLPFAQQEQNLALPPQAKRHNPGTMGGLEPGSQISKGLFLDAGHQQTPTSQ  
GLAHLQLLPHFRPGAMGTPKPMVGEEMAQFHQLQQQQQQQQAIIIDQLFKAELVQTGNPVLAAQILAR  
LNHLSPIGKPFYRAAFYCKEALQLLHANTNNLNPSMASSPFLIFKIGAYKSFSEISPVAQFANFTCNQALLEVL  
DGFERIHIVDFDIGYGGQWASLMQELALRSGGAPTLKITALASPSTHDQLELGLTRENLIHFASEINMAFEFELSI  
DSLNSTWSLPLVSENAIAVNLPVSSLSYQLSLPLVLRVFKQLSPRIVVSVDRGCDRTDLPPFNHVIQALQSYS  
NLLESDAVNVNFDALQKIERFLLQPGIERIVMGRFRSPEKTQHWRSLLFFVIWIRPIISQQFYRITGRVCSQEDSC-

SIGRAS25

Solyc02g092370.1.1

Nucleotide sequence (ORF):

ATGGATACTTTGTTTAGGTTAGTTAGCCTTCAACAACAACAACAACAATCTGATCAATACTCTTTAAC  
TCCAGCAGAACTCAAGCAGCTCTAGATCTTCTAACAACAAAACAGCACATACAATTATCATCCACATCA  
TAATCATCAAGACGAAGAATGCTTCACTTTTTCATGGATGAAGATGATTTCTTCTTCTTCTTCTAAACA  
CAACAATATCCTCCTCCTCATTACAATCAATATCAACAATCTCCACCCCAACTACAAGCAGTACCCC  
AACACATCAATCTCAATCTCAATATGATCATCAATTCTCCCAGCACGTGATTTAAATCTCGAATTCGCTTCC  
TCATTTTCTGGAAAATGGGCCACAGACATTCTTAGAACTTCTCGTGCCATAGCCGATAAGAACAGTAC  
ACGTGTCCAACAGCTCATGTGGATGTTGAATGAGCTGAGCTCCCCCTATGGAGATACCGAACAAAAATTG  
GCTTCTTATTTTCTCAAGCATTATTTAGCCGTATGACGGATTCTGGCGAACGATGCTATCGTACCTTATTA  
TCCGCTTCGGATAAAACATGTTTCGTTTCGAGTCAACGAGGAAATTAGTTTTGAAATTCAGGAAGTTAGCCC

TTGGACAACCTTTGGTCACGTTGCATCCAATGGTGCAATTATGGAAGCGTTAGAAGGTGAATCGAAGTTG  
CATATAATTGATATTAGCAACACGTATTGTAATGCAATGGCCTACTTTACTAGAAGCACTAGCAACCCGCAC  
CGACGAAACACCGCATCTCCGCCTCACGACGGTGGTTGCAGCTGCTAGCGGAGGTGCAGCGTCGGTGCA  
AAAAGTAATGAAGGAGATTGGTAGTAGAATGGAAAAATTTGCTAGGCTTATGGGCGTACCGTTTAAATTC  
AACGTGATCCACCACGTGGGAAATTTGTCTGAGTTGGATATGGGTGCGTTAGATATTAAGAAGAGGAA  
GCGCTAGCAATTAATTGATTGGTGCATTACATTCGGTTACGCCAGCTGGCAATCGAAGGGATTATTTGAT  
ATCATTATTTAGGAGGTTACAACCTAGGATTGTTACAATTGTTGAAGAAGAGGCTGATCTTGATGTGGGC  
GTTGATGGTTTCGATTTTGTAAATGGTTTTCAAGAATGTTTGAATGGATTAGGGTTTATTTGAATCATT  
GACGAGAGTTTTTCGAAAACAAGTAATGAACGTTTGTGCTAGAGCGACAAGCAGGACGTTTCGATTGTTG  
ATTTACTAGCATGCCACCATCAGAGTCAATGGAGAGGAGAGAAACGGGGGCAAATGGTCACATCGTA  
TGCATGCAGGAGGGTTCAGTCCGTTTTATATAGTGTGAAGTTTGTGATGATGTTAGAGCTTTGTTGAG  
AAGGTATAAAGATGGGTGGTTCGATGGGACAGTGTGGCGGAGATTCCGCCGGCATATTCTTGTCTGGAA  
GGAACAGCCGGTGGTGTGGGCCAGTGCATGGAAGCC  
TTAA

Amino acid sequence:

MDTLFRLVSLQQQQQQSDQYSFNSSRTSSSSRSSNKQNSTYNYHPHHNHQDEECFNFFMDEDDFSSSSSKH  
NNYPPPHYNQYQIQTPTTSSPTPHQSQSQYDHFSPARDLNLEFASSFSGKWATDILLETSRAIADKNSTRVQ  
QLMWMLNELSSPYGDTEQKLASYFLQALFSRMTDSGERCYRLLSASDKTCSFESTRKLVLKFKQEVSPWTTFGH  
VASNGAIMEALEGESKLHIIDISNTYCTQWPTLLEALATRTDEPHLRLLTVVAAASGGAASVQKVMKEIGSRME  
KFARLMGVPFKFNVIHHVGNLSELDMGALDIKEEALAINCIGALHSVTPAGNRRDYLLSFRRLQPRIVIVEEE  
ADLDVGVDFDFVNGFQELKWIRVYFESLDESFSKTSNERLMLERQAGRSIVDLLACPPSESMERRETGAKW  
SHRMHAGGFSPVLYSDEVCDVRRALLRRYKDGWSMGQCGGDSAGIFLSWKEQPVVWASAWKP-

SIGRAS26

Solyc02g092570.1.1

Nucleotide sequence (ORF):

ATGCAATTTACTGAGAGTTTACCTCCACAAGTTTCATCATTTTCAAGTTTGATGATGAACAAGGATAGTAG  
TACTAATAATAATCAGATCCAACGCGCCCGCCGTGGCCTGTTTTACACATCGAAGAATTTGGGGAACA  
TTGGGGATACTAATTGCATGGAACAGTTGTTAGTCCATTGCGCCAATGCCATCGAGAGCAATGACGCAAC  
TTTAGCACAAACAATATTATGGGTCTTAATAACATTGCCCTCCTGATGGTGACTCGAACCAACGCCTAA  
CTTGTGGATTCTACGAGCCCTAATTCTCGTGCTGCGAAAATTGGGACTTGTAAATTACTACTGCTAATC  
TGAATCATTCCATGGAACTCATAAATTCTCATTATTGAGCTTGCAAGTTTCGTTGATTTAACCCTTGCC  
ATCGGTTCCGGTTCACGGCTGCTAACGCTTCTATATTAGAAGCTGTGGAAGGTTACTCTATTATTCACATT  
GTTGATTTAGCTTAACTCATTGCATGCAAAATCCAACACTTATAGATGCAGTTTCTACTCGAGTAGAAGG  
ACCTCCGTTGATCAAACAACTAACGGTAGCTGGTGAACCGAAGATTTACCGCCTATGCTTGATCTTTCTTACG  
AAGAATTAGGTGCTAAATTTGGTAAATTTGCAAGGTCACGAAATGTCATGATGGAATTTAGAGTAATTCCT  
TCGAGTTCTTCGGATGGTTTTTCAATGTAATCGAACAGCTACGTGTTCAAAATCTAATACGTCGGATAA  
TGGCGAAGCACTAGTAATAAACTGTCACATGATGCTTACATACCGGAGGAAACAACGGTAATTTCC  
AACTCATTCCGTGCCATGTTTCTTAAGGCCATTCGGAATTTGGACCCAACAATTGTTGTGCTAGTAGATGA  
AGACGCGGATTTTACTTCTAATAATCTGGTGTGCGAGATTAAGATCGGCGTTAATTTATGGATACCTTA  
TGATACAGTGGATACATTTCTCCGCGAGGGAGCAAGCAAAGGCAAGTGGTATGAAGCGGATATTTGCTG  
GAAGATTGAGAACGTGATAGCTCAGGAGGGAATACAACGACTAGAACGGCTGGAGCCGAAGAGTCAGT

GGGTGCAACGGATGAGAAATGCAAATTCAGAAGCAGTGGATTTAGCGAAGAGGGAGTTACGGAAGTG  
AAGAACATGTTGGATGAACATGCAGCTGGGTGGGGGCTAAAGAGGGATGAAGAATATCTTGTGCTTACA  
TGGAAAGGACATAATGTTGATTTGCTACTGCTTGGGTTCTCTTTAG

Amino acid sequence:

MQFTESLPPQVSSFSLMMNKDSTNNNQIQRARPWPGFHTSKNLGNIGDTNCMEQLLVHCANAIESNDAT  
LAQQILWVLNNIAPPDGSNQRLTCGFLRALILRAAKIGTCKLLTANLNHSMETHKFSIIEASFVDLTPWHRFGF  
TAANASILEAVEGYSIIHIVDFSLTHCMQIPTLIDAVSTRVEGPPLIKLTVAGATEDLPPMLDLSYEELGAKLVNFARS  
RNVMMEFVRVPSSSSDGFSNVIEQLRVQNLIRPDNGEALVINCHMMLHYIPEETTVISNSFRAMFLKAIRNLDP  
TIVVLVDEADFTSNLNLVCRLSAFNYLWIPYDVTDFLPRGSKQRQWYEADICWKIENVIAQEGIQRLERLEPK  
SQWVQRMNRNANFRSSGFSEEGVTEVKNMLDEHAAGWGLKRDEEYLVLTWKGHNVVFATAWVPL-

SIGRAS27

Solyc02g094340.1.1

Nucleotide sequence (ORF):

ATGGGGAGTTTAAAGAACGACATAATAAAAAATGAGGTTGGCAGTGAAATAACAAGTTTTAAGGACCAG  
AATTCTTACATCAAATGCTTCCAGAGGACTCTCTTGCCTCTTCTGAATCCAAGAAAGTCACTCCTATCTCCT  
CGGACTTTGAACTCGATTGTGGCAGCTTAATACCTACCAGCCTCACTTCCCTCCCGGAGGTGGCGACGAT  
GATGATGTTGAAATCCAATCTCCTGATACTCAATCTGGGAGTCTTCTTTGCTGATCAGCTGGAGGCAGA  
TTTCATGATCTCTTCCCCGTCAGGAACCTTCTCCTCGACTTCTGACTACTACTACTACTACTACAAT  
AACACACATACACATCATAATCAGGGAATTCATGGGCAGAGCATGATGATGTGCTCCCCTCCTCGCTC  
TCCCTTGAGACCTAATAATTACAACCTCACTAATAAAGGCAAGGGACTTAGCCCCCTCCAAAAGTTTTCA  
ACTCTCCTAATAACCAGTTCATGCAAATGAGAGCTTTAACCTGCCAGCTCTTGAGAGTTTCTTAGATGATG  
ATTTGGCATCCGAATATCCACACTCAAAGTTTCAGATGTTGGATCCTCTTCCGAGTCTCTCAGTAATTC  
CTGATTTTTAGAGTGCCTGGCGTTGCCAAATTCATCATCCAATACGTCGCTAGCTTTATGGGATCATTAC  
TCAGCAACACATCTGTGGACAAGTAGACGATGAGATTTCCAGACGGGGTCTATTGCACCTCTGTCACAA  
CAGCTACATCAAGAACGACACCATGAGAAGCAACAAAACAAATACCAACACATGTTCAACTACCATCAA  
CACAACAATATACGCAAATGATCAATCACAATTTGGTTGTTGCTGCACCTGATCAGATGCAGGAACA  
GGACAGTGGCTTACAATTGGTGCACCTTCTCCTTGCTGTGCTGAAGCAGTCTCCAAAGAGGACTATATGT  
TGGAAGAAGGTATCTCCACCACCTGAATCGAGTAGTACCCCAATCGGTGACTCAATGCAACGAGTGGC  
TTCTTGCTTACGGAAGCTTACTGCTAGACTTGGCGCAACATTAGCCACTAAACCCAGCACCTCTGTCCC  
AAAACCTTCAATCCTTTTCTCCTAATCCCTTGAAATCTCAAGATCTATCAGATCTTTACCAAGCCTGC  
CCTTATGTCAAATTTGCTCATTTACAGCTAATCAAGCCATATTTGAAGCATTGGAAGCAGAGGAGCGCGT  
TCATGTTATTGATTTAGACATCCTCAAGGTTATCAGTGGCCGGCTTTTATGCAGGCCTTAGCAGCCCAC  
CTGGCGGTGCTCCTTCTCGTATCACAGGAGTGGGTTCTGATCCGGAAGCGGTGAGGAAACAGGTGCG  
ATGTTTGACAGAACTGGCGCAGTCCCTCCACGTTCTTTTGAATTTACCCGGTGGGGGAGCAGCTTGAG  
GATTTGAAACCGCACATGTTCAACAGAAGGATAGGTGAGGCTTTGGCGGTGAATTCGGTGAATAGACTCC  
ATCGAGTCCCAGGAATTGATTGGGAACCTGTTAGGCATGATCAGAGACCAAGCTCCAAATATAGTAAC  
GATCGTGGAGCAAGAGGCGAGCCATAACGGACCGTATTTCTGGGTCGGTCTGGAGGCACTGCACTA  
CTATTGGCCATCTTTGATTCCCTGGACGCTACATTTCCAGGGGATTATCACAGAGGGCAAATTTGGAAC  
AGTACATATTTGGACCTGAGATAATGAACATAGTTTCGTGTGAGGGAATGGAGAGAATGGTGCGGCACG  
AGAGGTTAGAAAAGTGGAGGAGGGTGATGGAAGGAAAAGTTTTAAAGGAGTAGCACTGAGTGCAAAT  
GCAGTCACACAATCCAAAATATTACTGGGTCTCTACTCCTGTGATGGTTATAAATTGACAGAGGACAATGG



TTGCTTGCTTTTGGGATGGCAAGATAGGGCCATTCTTGCTGCCTCTGCATGGCGATGCTGA

Amino acid sequence:

MGSLKNDIIKNEVGSEITSFKDQNSYIKLLPEDSLASSESKKVTPISSDFELDCGSLIPTS LTFPPGGGDDDDVEIQS  
PDNSIWESFFADQLEADFMISSPVRNLSSTSTFTCTTTTHNNNTYTHHNQGIHGQSMMMCSPPRSPLRPNNY  
NSTNKGKGLSPFQKVFNSPNNQFMQIESFNLPALESFLDDDLASEYSTLKVSDVGSSESLSVIPDFLECLALPNS  
SSNTSASFMSGLLSNTSVGQVDDEIFQTGSIAPLSQQLHQERHHEKQKQIPTHVQLPSTQQQYTMINHNLV  
VAAPDQMQEQDGLQLVHLLLACAEAVSKEDYMLARRYLHHLNRVVTPIGDSMQRVASCFTAL TARLAATLA  
TKPSTSVPKPFNPFPPNSLEILKIYQILYQACPYVKFAHFTANQAIFFAEAEERVHVIDL DILQGYQWPAFMQAL  
AARPGGAPFLRITGVGSYPEAVRETGRCLTELAQSLHVPFEFHPVGEQLEDLKPHMFNRRIGEALAVNSVNR LH  
RVPGNCIGNLLGMIRDQAPNIVTIVEQEASHNGPYFLGRFLEALHYSAIFDSL DATFPGDSSQRAKLEQYIFGPE  
IMNIVSCEGMERMVRRHERLEKWRVRMEGKGFKGVALSANAVTQSKILLGLYSCDGYKLTEDNGCLLLGWQDR  
AILAASAWRC-

SIGRAS28

Solyc03g110950.1.1

Nucleotide sequence (ORF):

ATGATTCATGATATGGCTAATGTTTTCTATCACTTGAGCCTTGAATGGTGATCAAATTGGTTATGACCT  
ATGGAAAATAGCCTGTATCTTACTCATCACAAAAGACTGTCTTATTCTTAACTTACACATCTGTTTTGA  
AGAGAAATGCTCCTACTAATAACATGATCATTTTCATCTTATCTAATGACAGTGCGAGTTTTAAGAGGTTA  
AGGAGAACCCCAAGTCTTGGTGAGTCTTTTGAAGCAATACCACTTTTTATAGTACTGAAAGCAGCAGCA  
CTGGTGGCAGTTTACCGAGAATTGGTAGTAGTAATAGTGTGAATAGCTTGTCAATGCAACCCAGGGATTCA  
TTTTCGCGATCATGTTTGGGCGTTGAACCAAAGGTATCTTGCTGCTGAGGCTTTTGAAGAGGCAGCAGCT  
GATATAATTAATCAGGAGGAGGAAAATGGGGAAGGTATGAAGTTAGTACAGCTTTTAATTACTTGTGCTG  
AAGCTGTGGCTTGTAGAGATAAGTCTCGTGCATCGGTGTTGTTATCGGAGCTACGTGCTAGTGCATTGGT  
ATTTGGGACGTCTTCCAGCGTGTAGCGTCTGTTTCATGCAAGGGTGTCTGATAGGCTGGCTCTGGTGC  
AGCCGCTTGGCACGTTGGTTATGTTGCTACCCCTGCTATGAATAAGACAGACATTGCCTTGGAGAAGAA  
AGAAGAAGCTTTGAGGCTGCTTTATGAGATATGTCCACATATTCAGTTTGGTCATTTTGTGGCTAATTGCTT  
GATATTGGAAGCCTTTGAGGGAGAGAGTTTCATTCATGTGGTTGATTTGGGAATGAGCCTTGGTTGCTT  
CATGGTCATCAATGGCGCGTCTTGTTCAGAGTCTTGTAAATCGCCCTGGACAGCCCCACGCCGCTTAG  
GATCACTGCTGTTGGACAGAATATCGAGAAATTGCAAATTATTGGAGATGAGCTTGGAGACTATGCAAGA  
AGCCTTGGTATAAATTTGGAGTTTTCAGCTGTGAAAAGCAACTTGGAAAACCTTAAACCAAAGGACATCA  
AAGTATACGATGGCGAGGTCTCGTGGTTAACAGCATTCTTCAGCTCCATTGTGTGGTGAAGGAAAGCCG  
CGGTGCACTCAACTCTGTTTTGCAGGTAGTTCATGAACCTTCTCAAAGATTCTAGTCCTTGTGGAGCAAG  
ACTCGAGCCACAACGGACCCCTTTTTCTCGGGAGATTGATGGAAGCTCTGCATTATTACTCTGCTATCTTCG  
ACTCCCTTGATGTCATGCTGCCAAGTATGACACCAGGCGAGCCAAGATAGAGCAATTTTACTTTGCAGAG  
GAGATTAAGAACATTGTGAGCTGCGAGGGACCAGCAAGAGTGGAAAGGCACGAGAGGGTGGACCAATG  
GCGTAGGAGGATGAGCCGAGCAGGTTTTCAAGCAGCGCTATTAAGATGGTGTACAAGCCAAACAGTG  
GCTTGCGAAAGTGAATGGACATGAAGGATTCACCATCACAGAAGAGAAAGGCTGCTTGGTTCTTGGATG  
GAAATCGAAGCCTATCGTGGCTGCCTCTTGCTGGAATGCTGA

Amino acid sequence:

MIHDMANVFLSLEPCNGDQIGYDPMENSLYLTHHKELSYSLNPYTSVLKRNAPTNNMIISSLSNDSASFKRLRRT

PSLGESFGSNTTFYSTESSSTGGSLPRIGSSNSVNSLSLQPGIHRDHVWALNQRYLAEEAFEEAAADIINQEEEN  
GEGMKLVQLLITCAEAVACRDKSRASVLLSELRASALVFGTSFQRVASC FMQGLSDRLALVQPLGTVGYVATPA  
MNKTDIALEKKEEALRLYEICPHIQFGHFVANCLILEAFEGESFIHVVDLGM SLGLPHGHQWRRRLVQSLVNRPG  
QPPRRLRITAVGQNIKLIQIGDELEDYARSLGINLEFSAVESNLENLKPDKIKVYDGEVLVNSILQLHCVVKESRG  
ALNSVLQVVHELSPKILVLEQDSSHNGPFFLGRFMEALHYYS AIFDSDLVMLPKYDTRRAKIEQFYFAEEIKNIVS  
CEGP ARVERHERVDQWRRRMSRAGFQAAPIKMVSQAKQWLAKVNGHEGFTITEEKGLVLGWKSKPIVAAS  
CWKC-

SIGRAS29

Solyc04g011630.1.1

Nucleotide sequence (ORF):

ATGTATCGGTT CAGGAATCTACTCGATGAGACTGTGGTGGTAAATAGTCCTAGAGATATTGTATTGAATCT  
CATCCGGAAGTTAAATCCTGATGTTTACATACAGGGGATCGTAAACGGTGCTTATAATGCTCCCTTCTTTAT  
CACACGATTCCGGGAGGCACCTTTTTCATTACTCGTCCGTGTTTGATATGCTTGAAGCTAATATCCCCGTGA  
AATTCCTGAGAGATTGCTGGTTGAAAAGTTAATATTTGGCAGGGAGGCAATGAATGTTGTAGCGTGTGAA  
GCTGCTGAGAGGATTGAGAGACCAGAAACATATAAACAATGGCAGGTCAGAAATACAAGGGCTGGTTTT  
AGGCAGCTTCTTTGAACGAGGAGATTTTGAGGATGGCAAAGATCGTGTAAGGCGTACCACAAGGAT  
TTCGTGATTGATGTAGACGGTCATTGGCTACTGCAGGGATGGAAAGGTCGTATCATGTATGCAGCTTCAA  
CCTGGAAGGCAGCTCTTTAA

Amino acid sequence:

MYRFRNLLDETVVNSPRDIVLNLIRKLNPDVYIQGIVNGAYNAPFFITRFREALFHYSSVFDMLEANIPREIPERL  
LVEKLIFGREAMNVVACEAAERIERPETYKQWQVRNTRAGFRQLPLNEEILRMAKDRVKAYHKDFVIDVDGH  
WLLQGWKGRIMYAASTWKAAL-

SIGRAS30

Solyc05g053090.1.1

Nucleotide sequence (ORF):

ATGGGGCAATATCATGAGGCAGGATCTGCAGTTAAATTAGAGGATGAAGATTGCTCATTTCGCTGATC  
CGAATCTGATTAATAATCTCAGAGTTAATGATTACTTTTCATGACGATTATGATCCAAATTTGATTAATAATC  
TTAGAGTTAGTGATAATTTAGTCAATATTAGCAGTCCATTTCAATCTGATGTGCAACGAAATGCTTTAGTTC  
CATTAACTGCAGATGACTTTTCATGAGGATTATGATTTTCAGTGATGGGGTTCTAAAGTATATAAATCAGATG  
CTTATGGAAGAGGATATTGAAGAAAAGACTTGCATGTTTCAAGAATCTGCAGCTCTTCAAGCTGCAGAAA  
GATCGTTTTACGAAGTTATTGGAGAGAAGTATCCTTCTCCACAAATCATGAGAAATCGTCCACTTTAGGT  
CAGATTGAACGTTATGCTATGGGCCACTGTAGTGGAATGATGGTCGTGATGGTTTACTAGGCCCAAATT  
GGATTCTTGATCTTGGTGAGGATGATGTGTACATGTTCCCGATGATGTTGCTTTGGATTCAACTTCTCGG  
TCATCCAACAGTTTGT CAGGCACTGTCCCGGATGTGCCTGTGGATTCTCCTGTGAGCACACTTAGGATTCC  
TGACATATTTAGTGGCGGAGAGTCTGTTATGCAGTTTAAAGAAAGGGGTGGAGGAGGCAAGTAAGTTCCT  
TCCTACAGGCAATAGCTTGCTGCTGATGTGAGGTATCATGTAGTGGGAAAGGAGCTACGGTATAAAGA  
GAGGAAAGATGCAGTCGTAAGGTTGACAAGTATGGGGAAAAGCGATATACTGAAAGGTCGAGGGGGA  
AGAAAAATACCTTTTCATGAAGATATAGTAGATTTAACGGAAGGGAGAAATAACAAGCAGTCTGCAGTGT  
TTCTGAATCAACTGTCCGATCGGAAATGTTTGATAGGGTGCTGCTATGCAGTGCAGGGAAAAATGAATCT

GCTCTTCGTGAAGCCTTGCAGGCTATATCAAGGCAAATGCATCGAAGAATGGCCCTTCAAAGGGATCTA  
ACGGTAAGAAGTTACAACGAAAGAAAAAGGGGGTAAAAGAGATGTGGTAGACTTGAGAACACTTTTGA  
CGCTCTGTGCACAAGCTGTTGCTGTAGGTAATCAACGGACCGCAAATGAGCTTCTGAAGAAGATAAGGGA  
AAGTTCTTCTCCTATGGGGGATGGAATGCAGAGGTTGGCACATTATTTGCTGACGGTCTTGAGGCACGG  
ATGGCTGGTCCGGTACTCATATCTATAAAGCCCTTATTACCGCCTGTATCAGCAGCTGATGCTTGAA  
AGCGTACCATCTACTGCTTGTGCTGCCATTGAGGACTATGTCTAGCTTTTTCTCAAATAAGACAATTAT  
GAATCTAGCTGAAAAGGCTTCAACAGTACATATTATAGATATTGGCATTATGTGGGGTTTCCAATGGCCTG  
GCCTCATAACAGTCTCGCTTCTAGACCAGGTGGACCTCCCAAGCTTCGTATAACTGGGATTGATTTTCCA  
AATCCTGGTTTCCGACCAGCAGAAAAGGTTGAGGAACTGGTAGGCGGTTAGCAAATTATGCTGAGAGC  
TTCAAAGTCTTTTGTAGTTCAATGCTATAGCGCAAAGTGGGAAACAGTTAAACTCGAGGATCTTAAGAT  
CAATAAGGGTGAGGTTCTGTGGTAACTGTCTGTACCGGTTTAGGAATCTGCTTGATGAGACTGTGGTG  
GTCAATAGTCCAAGAGATGTTTTCTGAATCTTATCCGGAGGTTGAATCCAGATGTTTTCTACTGGGAAC  
TGTAATGGTGGTTATAATGCCCCATTCTTATCTCACGATTCCGTGAGGCTTTTTCTACTACTATCCTTG  
TTTGATATGCTTGAAGTATTATCCCCGGGAAGTGCACGAGAGAATGCTGGTTGAAAAGAATATAATTG  
GTCAGGAGGCAATGAATGCCATCGCGTGCAGGTTGCTGAGAGAATTGAGAGACCAGAAACATAACAAG  
CAATGGCAAGTTAGAATTCTGAAGGCTGGTTTTCGGCAGCTTCTTTGGATGAGGAGATTATGAGAATGA  
CAACAGAACGATTCAAGGTGTACGACAAGAATTTATTATTGACGTAGATAGTGAATGGCTACTGCAGGG  
CTGGAAGGGTCGTATTGCATCTGCACTTTCAATGTGGAAGGCAGCATATTGA

Amino acid sequence:

MGQYHEAGSAVKLEDEDCSFFADPNLNNLRVNDYFHDDYDNLNNLRVSDNLVNISSPFQSDVERNALVPLT  
ADDFHEDYDFSDGVLKYINQMLMEEDIEEKTCTMFQESAALQAAERSFYEVIGEKYPSSTNHEKSSTLGQIERA  
MGHCSGNDGRDGLLGNPWILDGEDDVSHVDPDVALDSTSRSSNSLSGTVDPVDPVSPVSTLRIPDIFSGGES  
VMQFKKGVVEASKFLPTGNLLADVRYHVVGKELRYKERKDAVVKVDKYGEKRYTERS R GKNTFHEDIVDLTE  
GRNNKQSAVFSESTVRSEMFDRVLLCSAGKNESALREALQAISRQNASKNGPSKGSNGKKLQRKKGGKRDVV  
DLRTLTLCAQAVAVGNQRTANELLKKIRESSPMGDGMQRLAHYFADGLEARMAGSGTHIYKALITRPVSAAD  
VLKAYHLLLAACPFRTMSSFFSNKTIMNLAEKASTVHIIDIGIMWGFQWPGLIQLASRPGGPKLRITGIDFPN  
PGFRPAERVEETGRRLANYAESFKVPFEFNIAIQWETVKLEDLKINKGEVLVNVNCLYRFRNLLDETUVVNSPRD  
VFLNLRRLNPDVIFLGTVNGGYNAPFFISRFREALFHYSSLFDMLETHIIPREVERMLVKEKNIIGQEAMNAIACEG  
AERIERPETYKQWQVRILKAGFRQLPLDEEIMRMTTERFKVYDKNFIIDVDSEWLLQGWKGRIASALSMWKA  
Y-

SIGRAS31

Solyc05g053420.1.1

Nucleotide sequence (ORF):

ATGTGTGATCATTCTCATCAACAATCTCCATTGCCTTCATCATTCAAGATCCTGAAAGATTATGACACAACA  
AGGTTTCATGAAAAGATCAAAAACAGAACAGAACATCATTGTTAGTGCTGAATGTATCAAGGAAAACAATG  
GATCCATGTTATCTACAGACGAAATCCTTCTGTTAGGTGCTGAAAGGTTTATCCAATCGTTTACCCTTCGTG  
GTGATCAAGAACCATACATGTTTAACCATCCATTGCGGAGCTCATTGCTTGACCTTACGAGGAAGACT  
AGAAATGTGCTACTAGTCGAAAATCTTCTGCTTCTGCTGAGAAAGTAGGCCAGGAACAGTTTGATCGCG  
CTAGAAGGATTCTCAACGAGTTCTGTGATAAGCTGTGTTCCAACACTGGAAATGCAGTTCAGAGATTAGT  
ATACTACTTTTTCTCAAGCACTTCATGAGAGAATAGATAGGGAAACGGGGAGAGATACATCGAAAGGAAA  
TGAAATGAAACGATTAGTACAGCATATCGAGCATTATTGATGAACTTAAACCTCACTATGATTGCAGCAC

ATCAGAACATACCTCTGTCTCAGGTGTCTCAGTTTGTCTGCTGTTCAAGCCATTATAGATCATGTAGGAGAA  
TCGAAAAAGGTTTCATATAATCGATCTCAAGATAGGTAGTGGTCTGCAATGGACAATCTTGATGCAAGCTCT  
GGTCTCACATCAAATCAAACATCTCAAGATAACTGCTTTATGTACCAACCTAAAACATAAAAATTGAGGAAG  
CACGCGAACGATTGATGGACTTTGCAAAGTCCTTGAACCTGCCCTTCTCTTCAACATTGTGATGGTTAAG  
GATATGACAGAGCTAAAAGAAAGAAGACTTTGAGATAGATGACGATGAATCAATTGCTATCTTCGCGCAAT  
ACATCCTTATGTGGATGTTAGCGCGACCAGACAAGCTTGACTCTTTGATGAGAGTTATCAAAGGTATAAAAT  
CCTCGAGCATTGATCGTTGTAGAAGTGGAAGCAAACCATAACTCACCAGTATTCGTGGACCGGTTTGTGG  
AAGCCCTGTTTTCTATGGTGCATTTTTCGACTCGTTGGAGGATTGCATGAAGAACGACGAACGAAACAG  
GACAGCTACAGAAGTGGAACTTGAGCCAGGGAATAAGAAGCATTGTGGCAACTGAGGGTGAGGAAA  
GGACCATTAGACATGTAAGTAGACGTATGGAGGGCGTTTTTCGCGCGATATCGTATGGAGGAAATGG  
AGCTAAGTATGTCATCATTGTATCAGGCAAATTTGGTCTCAAGAATTTGCTTGTGGGAGTTGTTGCACA  
CTGGAAATGAACAAAATTGCCTACTAATTGGATGGAAAGGAACCCCTCTTAGTTCACTTTCTGCTTGAA  
ATTTTCTTGA

Amino acid sequence:

MCDHSHQSPSSFKILKDYDTRFMKRSKTEQNIIVSAECIKENNGSMLSTDEILRLGAERFIQSFTLRGDQEP  
YMFNHPFASLLDLHEEDTRNVLVENLLASAQKVGQEQFDRARRILNEFCDKLSNTGNAVQRLVYFYSQALH  
ERIDRETRDTSKGNEMKRLVQHIEHSLMNLNLTMIAAHQNIPLSQVSQFAAVQAIIDHVGESKKVHIIDLKIGS  
GLQWTILMQALVSHQIKHLKITALCTNLKHKIEERERLMDFAKSLNLPFSFNIVMVKDMTELKKEDEIDDESI  
AIFAQYILMWMLARPKLDSLMRVIKGINPRALIVVEVEANHNPSVFDVDFVEALFFYGAFDSDLDCMKNDER  
NRTATELHLSQGIRSIVATEGEERTIRHVKVDVWRAFFARYRMEEMELSMSSLYQANLVKNFACGSCCTLEM  
NKNCLLIGWKGTPLSSLSAWKFS-

SIGRAS32

Solyc05g054170.2.1

Nucleotide sequence (ORF):

TGATTCATGATTTTTTTTGGCAGTTGGTTATGACATTCGACGTATCTGCTGAAAGCTTCTGAGACTTTGTGA  
CTACTTTTAACGAAGAGACTTCGTTAGCTTGGAGCAGTTGTTACGATTTTAGCCAATTTGAAGAGAGTGC  
GTGACTGATCCCAATATGCGCGCATCCAGATACCTCAATCATCAGGCGGAGTTCACAAGTTGTGCCATCA  
GCCAACGGCGAACTTTGAGCAATATTATAGCCCTTACCATGTAGTTAACAACAATCCAGCGATACTAGCA  
GCTCGGGGACACAGCTCTTATCAGACACAGAATGATAAGTTTTTCACTCTTGACTCACTTCTCTGATGCTG  
GTTACGTTAGCTATGATTCGCTCCTGCTGTAAGCGTCTCGTCCAAGTGGAGTCCGTTCTCTCTCAGTGTT  
CTCAGTCGTACATATCGGATCAGCACCATTCTCAGACAACACTTATGGTTACCTTTGAGCGGGTGTTC  
GTAATTAATGATGGGAATGAACTGAAGCATGTGCTAAGGGAGATGGCGAATAATTTGCTAGGGCCTGGT  
TTTGATATTGATGAAGACAGCAGTTGTTCTTTCAATGGTGAGGTCTCAAACCTTCAAAGTGGAAATCGCGT  
ATTGGAAATTGCACCGAGCTTGGACATGAAAGAGCTGCTTCTTGCCTGTGCTGAAGCAATATCGGATGTC  
GAAGTCACAGCTAGAGATGCTCAGATGAATGTCTTAGAGCAAAAAGGTATCGGATGCTGATGTGACAGCT  
AGAGATGCTCTGATGAATGTCTTGGAGCAAAAAGGTATCAGTTTCCGGGGAACCTATGCAACGATTAAGCG  
CATACTGTTGGAAGGACTCAAAGCAAGAATATATTCTTCGGGAAGTAACATCTACAAAATGCTCAAGTG  
CAAGGAACCAACTGGTTCAGAATTGATCTTTACATGCAAGTCTCTATCACATCTGCCCTACTACAGATT  
CGTTACACATCCGCCAACGTTGTGATTGAAGAAGCCATGAGGAATGAGAGCAGAATCCATATAATTGAT  
TTTCAAATTGCACAAGGAAGTCAATGGGTGTTCTTATGCAAAATCTTGTGTTGATGATTCCCAATCAGCT  
CATGCACGCGGTGGTGGACTTACCTAGTAGGCGAAAGGCTAGCGAAAGCTGCTGCATCATGTGGAGTG

CCTTTTGAATTCCATGCTGCTGCTATATCGGGCTGTGAGGTTTCATCTAGAAAACCTTCAAATGAGACATGG  
AGAAGCCTTGGCAGTTAACTTCCCGTACGTGCTGCACCACATGCCAGACGAGAGTGTAACTGTAAC  
CATCGAGACCGTCTACTCAGATTGGTTAAGAGCTTGTCCCCGAAATAGTCACCCTTGTTG

Amino acid sequence:

MRASQIPQSSGGVHKLCHQPTANFEQYSPYHVNNSSDTSSSGTQLSYQTQNDKFFTLDSLDPDAGYVSYDS  
PPAVSVSSNWSPFSPQCSQSYISDQHHSSDNTYGSPLSGCSVINDGNELKHLVREMANLLGPGFDIDEDSSCS  
FNGEVSKPSKWNRVLEIAPSLD**MKELLACAEAISDVEVTARDAQMNVLEQKVSDADVTARDALMNVLEQKV**  
**SVSGEPMQRLSAYMLEGLKARIYSSGSNIYKMLKCKEPTGSELISYMQVLYHICPYRFAYTSANVVIEEAMRNES**  
**RIHIIDFQIAQGSQWVFLMQNLVLMIPNQLMHAVVDFT-**

SIGRAS33

Solyc06g009610.1.1

Nucleotide sequence (ORF):

ATGGGTTTCAGTTCAAATTCTACGTTTCAGTCTCAAAGACTATGTTGTGAATATGTTAAGAGAGTCATT  
TCAATGCCTTACCATTATCCTCCTCAGCCTTCTCCTCCTCTCCTTTATTGTCCTCGCTAGGCTGTCAGTTA  
CTCGTTATCTCATTGCCACATCAGATTACACGGAGCCCAATACACTACTTGTCAAGCTCTTCTCTATGCAA  
ATCCTATATTTCTCGTCTACTAACTCCACTTGTACCATTCTGCTTTGACTCAATGCTTGACAGGACGAAAC  
TCTAACTGATCACATCATGATTTCAAAGTCTCATCTTTATATGTCGTGGTTAATACTTTTCACATTTCAAATT  
TGTGTGAGCATAGGCATAGAAGGAAGTATAGCTGTTGGAATAGATGGTAGTACTAGTTTTAGTCACCAAA  
GATTATATTTATTGACGAGAAGTATGTTTTTCATGGGATTGCATGAGACAACGTTGTTTTGGTCCAAGAAA  
GTAGTGAAACCTGTGGTTGATGACACAATTTTTGGCGTTGAGAAGGAGGATAGGTATGTTGAGAAGGTG  
GCTATGGCAATGAGTTTTGGTATTTTGTGGTGGTGAAGTTAGGGGATGAAGTTGAGTCTTTAGTGGTTG  
TGGCTGAGATGAAAAGAGACTTATTTGGTAGTGTGGTTTGGTTGATTTTGTGGTTGGTGGTTGTATTAT  
GTGACTGTGGCAATTGGTATGGTTAAGTTGTGAAGGGACTAATTTGGCTAAATTTTGTGTTGTTTTGTGG  
GAATATGGTGGTTGGTTTCAGACAATGCAGGCTCTGTACAAGAAATGATGAAAAGATGGATCAAATCCCA  
ATCCCCACCATTGATTTTCAGTGTTTTTCAGGATGGTACAATCATGTTCAAGAGTGTGGGAGAAATGAATT  
GATCAACAATGGCGCCGTAGATCCTTGGTTTGAATTGGACAGTGAGGATCTTGATTCTCTTACACAGTAT  
TTGACCTTAAATATCAAGATAATACAGCAGACAAACAAGTACAGTCACTGGAAGATCAGCAACAAAGCAT  
TTCAGATCACTGGACCCAAAGTATGATTCTTCCAACATGGACTTGCCCTGCAGTTTATCCAAATTA AAC  
GACCCCGAAGCATCTGATGGGATTGAGCCTCAGGAGCCAAGGCTTGACAATTTCCATGGAGAGAAAACA  
AATTCATTTCTTTAGCATCTTTGGAGCTCTTGAACAATTGTGGGAGATTGTTCAAGAAACCAAGTGAGGA  
AAACTTGAGCAACGTATTACTCAGCAACGAGGCTCGTGAAGTAACATCTCTAAGTTGTCAACAGAAGAA  
ATCTTACGAGTTGCAGGAGAAAGATATATCCAGTACTCCACCCAAAGGGTAGATGGTCTTTCTATGTTTAT  
ACATCCATATGCTTCATCACTTTTCGGGCCTTTCCATAGAGGAAACAAAGGACATGGAACCTTGTTACCTCC  
TTCTAGCTGCTGCAGAAGAAGTGGATCAGCAGCAATTTCAATTTGGCTAGCCAATCTATTGCACACTGCCTG  
TGGAAGGCATCTGCTACAGGTAATCCAATCCAGAGACTTTGTTTCTATTTTGGTGAAGCTTTACAAGAAAG  
GATTGATCGAGAAATAGGAAGGTCCCCATGTTTCGAAAGAAAGTTAAGATTTTTAAGCACTCTGGCATT  
GGTAATACTCCTGAATCCTTAACATGCCATACAGAGATCCCTTCAGTCAAGTAATGCAATTCGCGGGAAA  
TCAGGCAATAGTTGAATATGTTAAAGGTGCAACCAAGATCCATTTGGTTGACTTTAATATTAGAAGTGGAA  
TTCAGTGGACAGGATTGATGCAAGCTCTTCCGAACGACGTAAGTGTCCAATTGAGCTTCTGAAAATTACA  
GCCATTGGACACCAAGAAAAACAGAAAATAGAAGAAACAGGCAAGAGATTACAAAGTTTTGCCAATTCCT  
TGAATCTCCCTTTTCATTTGATATGATCTTTATGTCTGACATGAAAGATCTCAAGGCAGAATCAGTCAATC

TTAAAGCAGATGAAACTGTAGCTGTCTATTGTTACTGTACTTAGAACAAATGATCTGCAGGCAAGATTAT  
TTGGACAACACGATGCGAGTAATCAGAGGACTAAGACCATCTGTGGTTGTTGTCTGTGAAGTTGAGGCAA  
ACCTTAATTCACCTTCATTTTTGAACCGTTTCGTGGAGGCACTTTCTTTTATAGTGTGCTTTTTGATTGCTTT  
GAAGACTGCATGGATAGAGACAATTTGGTCAGAAAAGAGGATTGAAGTATTTTATATTGGTGAAGGAATC  
CGGAATATGGTTGCAGCTGAGGGTGCAGAAAAGGTTCACTCGGAATGTAAAGCTTGATGTATGGAGAGCA  
TACTTTGCAAGGTTTGAATGGTGGAAATGGAGCTCAGCGAGTCATCTCGATATCAAGCAAATCTGATTC  
TAAAGCAATTTCCCATGGCAGTTCTTGCATTGTTCAAAGGATGGAAAGGCCCTCTAGTTGGATGGAA  
GGGAACACCCATTGAATCAGTTTCTATTGGAAGTTCTTGTA

Amino acid sequence:

MGSSSKFYVSVSKDYVVMNMLRESFQCLTIILLSLLPLSFIVLARLSVTRYLIATSDYTEPNTLLVKLFLYANPIFLRLT  
PLVTISALTQCLTGRITLDHIMISKSHLYMSWLILFTFQICVSIIEGSIIVGIDGSTSFHQRLYLLTRSMFFMGLHE  
TTLFWSKKVVKPVVDDTIFGVEKEDRYVEKVMAMAMSFILWWCKLGDEVESLVVAEMKRDLFGSVGLVDFV  
GWWLYYVVAIGMVVVKGLIWLNFVFCGNMVGSDNAGSCTRNDKMDQIPIPTIDFSVFQDGHNHVQ  
ECGRNELINNGAVDPWFELDSELDLSLYTVFDLKYQDNTADKQVQSLDQDQSSISDHWTSDDSSNMDLPLQ  
FIQIKTTPASDGIQPEPRLDNFHGEKTNISLASLELLNCGRLFKKPEENLSNVLLSNEARVSNISKLSTEEIL  
RVAGERYIQYSTQRVDGLSMFIHPYASSLSGLSIEETKDMELVHLLAAAEVDDQQQFHLASQSIHCLWKASAT  
GNPIQRLCFYFGEALQERIDREIGRSPCFERKLRFLSTLALGNTPELSTCHTEIPFSQVMQFAGNQAIVEYVKGATK  
IHLVDFNIRSGIQWTGLMQALSERRNCPIELKITAIGHQEKQKIEETGKRLQSFANSLNLPFSFDMIFMSDMKDL  
KAESVNLKADETVAVYCYTVLRMTCRQDYLDNTRMVRIGLRPSVVVVCEVEANLNSPFLNRFVEALFFYSVLF  
DCFEDCMDRDLNLRKRIEVFHIGEGIRNMVAEGAERFTRNVKLDVWRAYFARFGMVEMELSESSRYQANLIL  
KQFSHGSSCIVQKDGKALLVGWKGTPIESVSIWKFL-

SIGRAS34

Solyc06g035620.2.1

Nucleotide sequence (ORF):

ATGGAGGACTTGCCTTGCAGGGTGTCCGTTTAGCAATCTGAAGAGCTGCTTATATGTTGTGTCGGTTAC  
TGGAGATCCCATCCAGCGTCTTGGTGCTTACATTGTAGAAGGCCTCGTAGAAAGAAAGGAGTTATCTGGA  
ACCACCATATACAGGAGTTTGAAGTGTAAAGAGCCGGCTGAAGCATGCAGAAATGAAGATCGCATCCAC  
ATTATAGACTTCAAATTGCACAGGGGACCAATGGATGATTCTTTACAAGCTTTGCAGCACGACCCGG  
TGGTGCCCTCTACGTACGTATTACAGGAATTGATGATTTAGTTTACAGTACGCTCGGGGAGATGGATTG  
GCTGCAGTTGCCAGACGGCTATCAGCAATTTCTGAGGAGTTCAACATTGCTGTTGCGTTTCATGCAGTGCC  
AGTTTTTCTCTGAAATCACTTGGGATATGCTTATGTAAGGCCTGGTGAAGCTCAGGCTGTAACTTTC  
CTTTGCAACTTCACCACACCCCTGATGAGAGCGTTGACGCGAATAACCCTAGAGATGGTCTCATTAGGATG  
ATAAAGTCACTTTGCCCCAAGATAGTCACTTTGGTGGAGCAAGAATCAAACACGAACACAGCTCCATTCT  
CACTAGGTTTGTAGAAGCTCTAGATTACTACCATGCAATGTTTGAGTCCATAGATGTGACCCTACTAAGGG  
ACATGAAGGAGCGGATCACTGTGGAGCAGCACTATTTGGCTAGGGATATAGTGAATGTCATAGCATGTG  
AGGGCAAGGAAAAGAGTAGAACGTCACGAGCTATTGGGGAAGTGGAAATCCAGGTTCAAGATGGCAGGT  
TTTCAGCAATATCCTTTGAGCTCTTTGTGAATTCAGTGATTAAGGACCTCATGAAGCGTTACTCGGATCAT  
TATACTGGTGGAGCAAGACGGAGCTATGCTGATATGCTGTGGGGGTGGAAGGAGCGGAATCTAGTCT  
CTGCGTCTGCTTGGTTTTAACGAATACTTCAGAAACGAAGCTGTAGTTCATTATGTGGAACAGATGGTT  
AGCCTTCTTTTTTACTTATCCAGACAATAGGATTGATCAAGTAATTATACTCGTGTATATAGTTTCAAT  
TTTCTGAAATTTTAGTATATAAAAATGCTTTATGTTTATTGTTCAAGTTATCCTTGATATTATTCGTTAGAAG

TATAACAATTAGTTCTCGTCCTT

Amino acid sequence:

MEDLP LQGV PFSNLK SCLYV **VSVTGDPIQRLGAYIVEGLVERKELSGTTIYRSLKCKEPAEACRNEDRIHIIDFQIAQ  
GTQWMILLQALAAPGGALYVRITGIDDLVSQYARGDGLAAVARRLSAISEEFNIAVAFHAVPVFALEITWDM L  
DVRPGEAQAVNFPLQLHHTPDESVDANNPRDGLIRMIKSLCPKIVTLVEQESNTNTAPFLTRFVEALDYHAMF  
ESIDVTLLRDMKERITVEQHYLARDIVNVIACEGKERVERHELLGKWKSRFKMAGFQQYPLSSFVNSVIKDLMK  
RYS DHYTLVEQDGAM LICCGGRSGI-**

SIGRAS35

Solyc06g076290.1.1

Nucleotide sequence (ORF):

ATGGAGTCCTTAATCAGATCTTTTGCAAAGAGGAGAATATCTGCTGCAGACATATTTAAAGCCTTTCAGGT  
GTATGTTACAGCATCCCCATTCAGGATGATGTCCAACATAATCGCTAACAAAGTCAATTGGGATGCTGACAA  
GGGAAGCAACAAGTATACACATTATTGATTTTGGTATTCTGATTACAGGAATTGATTTTCCACAAGCTGGA  
TTCAGACCAGCAGAGAGAGTTGAGGAGACAGGGCGTCTGACTAGTATATGAAAACAGTCCAAGAGATGAT  
GTGCTAAGATTGATTAAGCAAATAAAGCCTGATGTTTTCTTCATGGAATTGTAAACGGGGCATATAACTC  
AACTTTCTTTGTAATTCGATTTAA

Amino acid sequence:

**MESLIRSAKRRISAADILKAFQVYVTASPFMRMMSNIIANKSIGMLTREATSIHIIDFGILITGIDFPQAGFRPAERVE  
ETGRRLVYENSPRDDVLRLIKQIKPDVFLHGIVNGAYNSNFLCNSI-**

SIGRAS36

Solyc06g082530.1.1

Nucleotide sequence (ORF):

ATGAATACTAGCTCCCATTTCCAGGTGATCATAGATCATCTGATGGATTTGAATTTGGTCATTGTTGTGGT  
GGTGGAGGTGATAACGATGTTGTCTGCTTTTCGAGCAGACGATCATCGGAGGAAGAGGTTGTTATTGGA  
AGTGGTAGTGATCGTACAGTAGTCCAAGGAGATTACTTCGATGGAGTTTTAAGTATATACATCAGATGCT  
TATGGAAGATCAAGAAGATTTAGAAAATAGGCCATGATGTTTCAAGATTGCATAGCTCTTCAAGCAGCT  
GAGAAATCGTTTTATGACGCGTTGAATCCACCTACAATTCATCGCGATTTGTTGATGATAGTGGTAATCA  
ATTTCAAGACGATTACTGCGATGCTGTGAATCATCAGTTTGCTGAGACAACCTTCAATTCTGATTTAGATAA  
TGACCAATTTTCGTTTTTTTATAACACTAATACTATCTGTCTGTTGGTGGTATTAGTGTGTTGTTCAAT  
GGCGATACATCGAATGCTATCAATTATCATCAGAAGGGCGAAAATGAAAACAAAAGCATACTCGCGATG  
AAAATAGTGAGAGTTCAAAGGGCGAAAATCGAAGCAGTTGGCTAGCAATGGAACAGAGGATGGAAAA  
ACAGAGGAGCACTATGATAAGGCGCTTCTGCCCCGGTTTGAATCCTTCGTTTTACGAAAATCGATCAAA  
ATCAGCAACAGCATGGGATAATGCAGCATGGGATAAAACAAAAGAGCTCTCATATAAAGCAGTCTAAACGT  
GGAAGGCCTCGCGGAAGCAAAAAGGCGTTAAGACGAATGAAGTAGTAGATCTTACAAGCCTCCTAACG  
CGTTGCGCGGAGGCTGCAGCAAGCTACAACACCAAAACATTCATAGAGGTAATAAAAATTAGGGAAC  
ATTCTTACCTTTTGGTGTGCTACTTCAAGATTGGCTATTGCTTTGCCAATGCCCTGGAAGCTCGTTTTG  
CTGGCGGAGATACAACATGGATCACAAGTAAGAAAATATCAGCTGCAGATTTCTTAAAAGCTTATCAGGT  
CTACATCACTGCTTGTCCATTCAAGAGGATGTCAAACATATTCGCCAACAAAGTCTATCGCGAAGCTAACAA

GTGAATCGTCGAGGGTTCATATAATAGATTTTGGTATTCTATATGGATTTCATGGCCTTGATAATACAC  
GGGATTTCCCTAAGGCCCGGGGACCTCCAAAGCTTAAGATCACAGGAATAGATTTCCCTCAGCCAGGTT  
TTCGACCAGCGGAGAGAGTTGAGGAGACAGGGCGACGTTTGAAGGAGTATTGCAAGAGATTGATGTTCC  
CATTTGAGTATAAAGCAATAGCTAAGAAATGGGATGAGATTAAGTAGAAGATTTGGATATCGATAGAG  
ATGAAATCGTCGTGGTGAATTGTTGTACAGGCTGAAGAATGTCCTTGATGAAACAGTAGAAGTAACACA  
CAACAACAAAAATCCAAGAGATGCTGTTCTCAACTTGATCAAGGAGATAAATCCTCATTACTTTGTCCATG  
GGATCGTCAACGCTATGTACAATGCATCTTTCTTTACTACAAGATTTGAGAGGCATTATCCATTTCTCGT  
CCCAATTTGACATGTTTGAAGCCACAATGCCACGAGAAGATGAAGGAAGGATGATGTTTGAAGCAGGAAG  
TATTCGGAAGAGATATCATGAACGTTATAGCTAGTGAAGGGCGGAGAGAGTGGAGAGGCCTGAAAGTT  
ACAAGAAATGGTCAATGAGGAATCAGATAGCGGGGTTAGACAACCTCCATTGGATCAAGACATCGTCAA  
GGAAGTAAAAACCAAGGTGAAAATGTTCTATCACGGGGATTTTCTGGTGGATGAAGATAGCAATTGGAT  
GTTGCAAGGCTGGAAAGGAAGAATTATGTATGCACTCTCAGTTTGGGAGCCTATTCATAAGTAA

Amino acid sequence:

MNTSSHFPGDHRSSDGFEGFHCCGGGGDNDVVCSSRRSSEEEVIGSGSDRTVVQGDYFDGVFKYIHQML  
MEDQEDLENRPCMFQDCIALQAAEKSFYDALNPPTIHRDFVDDSGNQFQDDYCDVNHQFAETTFNSDLDN  
DQFSFFYNTNTICHGVGDGISVVNGDTSNAINYHQGENENKKHTRDENSESSKGRKSKQLASNGTEDGKTEE  
HYDKALLCPGLNPSFYENRSKSATAWDNAAWDKQKSSHQKSKRGRPRGSKKGVKTNEVVDTLSLLTRCAEAAA  
SYNTKTFIEVLNKIREHSSPFGDATSRLAYCFANALEARFAGGDTTWITSKKISAADFLKAYQVYITACPFKRMSNIF  
ANKSIAKLTSESSRVHIIDFGILYGFQWPCIIHGISLRPGPPKLIKITGIDFPQPGFRPAERVEETGRRLKEYCKRFDV  
PFEYKAIKKWDEIKVEDLDIRDEIVVNCLYRLKNVLDETVEVTHNNKNPRDAVLNLIKEINPHYFVHGIVNA  
MYNASFFTTFRREALFHSSQFDMFEATMPREDEGRMMFEQEVFGRDIMNVIASEGAERVERPESYKKWSM  
RNQIAGFRQLPLDQDIVKEVKTKVKMFYHGDFLVDEDSNWMLQGWKGRIMYALSVWEPIHK-

SIGRAS37

Solyc07g043330.1.1

Nucleotide sequence (ORF):

ATGCTTTTCGTATCTGCAATCCAATTAATCATAACATCTTCGTATTCATCTTCCATGCTTCTAAGCGCTCAA  
TTTCTGAGTTTACTCCGGTCTCAGATGAACCTCAACTTCTTACTAAACGGCCCCGAAATGAAAGGGGAGAG  
GAAGAGGAAGAAGAAGGTGAGGAGTACTTCTCGTTGACGCCGATTCCATAGGTCTTCGCCTTCTCGGCT  
TGCTCCTCAATGCGCTGAGTTTGTGCCATGGAGAATCTCGATGAAGCTGCTGATTTATTGCCGAAATC  
GCTGAGCTTCTTCGCCGTTCCGGCTCATCAGCTGAGCGAGTCGCTGCTTACTTCGCTGAATCTCTATCGGCC  
AGAATTATCAGTTCTCATCTCCGATTTTATTCTCCGCTTAACTCAAATCCCTAACTCTCACGCATTTCCAAA  
AACTCTTACCGCTCTGCAATCTTACAACACAATAAGTCCGCTCATCAAATCTCTCACTACACTGCAAATC  
AAGCTATCTACCAAGCATTAGAAGGTGAAGATCACGTCCACGTCATCGATCTCGACATCATGCAAGGTCTT  
CAATGGCCAGGATTGTTCAAATCCTCTCCTCTCGATCGAGAAAGCTCCGTTCCATCAGAATCACCGGCGT  
CGGATCCTCCATGGAATTACTCGAATCCACCGCCGTCGACTCACCGAATTCGCCAACTCATTCCGACTTC  
CGTTGAGTTTCAACCTTTTGAAGGCAAATCGGACACATCACAGACCTGAATCAACTCGGAGTCAAAT  
GGGAAACTACCGTTGTCAATTGGATGCACCATTCCTCTACAATATCACAGGGAGTGATTTAGGTACTTT  
CCGATTGTTAACTTTGTTAAGGCCGAAATGATCACACTGGTTGAACAAGATCTGAGTCACGGAGGAAAC  
TTTTTGAGCCGATTGTTGAGGCATTGCATTATTACTCCGCTTGTGATGCATTGGGGGATGGATTGAG  
TGAAGAGAGTGCAGAGAGGCATAGAGTGAACAGCAGTTGTTGCGGTAGCGAAATTAGGAATATTGTAGC  
GGTAGGTGGGCCAAGAGGACGGGGGAAGTACCCGTAGAGAGATGGGGCGATGAATTGAAACGAATC



GGGTTTTTACCCGTTTCATTATCGGGTACTCCAGCTGCTCAAGCAAGTTTATTATTAGGGATGTTTCCGAGA  
GGGTATACGTTGGTGGAAAGAAAATGGGTGTTTAAAATTGGGATGGAAGGATTTATCGTTGTTGACTGCAT  
CTGCATGGCAACCTTGCGATTAA

Amino acid sequence:

MLFVSAIPINHTSSYSSSMSSKRSISEFTPVSEDEPQLTKRPRNERGEEEEEGEELLVDADSIGLRLLGLLLQCAE  
FVAMENLDEAADLLPEIAELSSPFGSSAERVAAYFAESLSARISSHLRFYSPLNLKSLTLTHSQKLFALQSYNTISPL  
IKFSHYTANQAIYQALEGEDHVHVIDLDIMQGLQWPGLFQILSSRSRKLRSIRITGVGSSMELLESTGRRLTEFAN  
SFGLPFFEQPFEGKIGHITDLNQLGVKIGETTVMNWMHHCYLNITGSDLGTFRLLTLRPKLITLVEQDLSHGGNF  
LSRFVEALHYYSALFDALDGLSEESAERHRVEQQLFGSEIRNIVAVGGPKRTGEVPPERWGDDELKRIGFLPVSL  
GTPAAQASLLLGMFPRGYTLVEENGCLKLWGDLSLLTASAWQPCD-

SIGRAS38

Solyc07g052960.1.1

Nucleotide sequence (ORF):

ATGAACTCTACAACCATTCCCCTCCAAAACCTAGTTTTTTCAACAACCTCTCAAAGTTCTCTAGCAGGAGCA  
CTACAAGGATGCATTGGGAGCCTTGATGGAGCATGTTTGGAGAACTATTACTTCATTGTGCAAGTGCCTT  
AGAGAACAATGATGTAACCTTTGGCTCAACAAGTCATGTGGGTGCTCAACAATTTGGCTTCTTAATGGAG  
ATCCAAATCAAAGACTCACATCATGGTTCCTTAGGGCATTAAATTTCAAGGGCTTCTAGGGTTTATCCTAAT  
GCCACAAATTTACATGGAAGTAGTAACCTTGAAAGGAGATTAATGAGTGTGACTGAGCTAGCAGGGTAT  
GTGGATCTCATCCCATGGCATAGATTTGGATTTGTGCATCAAATAGTGTTATTTATAAGGCCATTGAAAG  
GCAAACAAAAGTTACATATTAGATTTTAGTATCACTCATTGTATGCAATGGCCAACCTCTCATTGATGCAAT  
TGCTAAGAGGCCTGAGGGTCTCCTTCTCTCGAATATCGGTGCCTTCATGGAGACCACAAGTTCCTCCAT  
TGCTCAATGTGTCAAGTGAAGAAGTTGGCCAACGTTTGGCAAATTTGCGGAAATTTAGAGATGTTCTTTT  
GAATTCATGTGATTGAAGACTTGAACATGACATGTTCTTGAGCCAATTGAATCCTTCAACTCTTCAAATT  
AGAGATGATGAAGCTTTGGTTGTGAATTGCCAAAATTGGTTAAGGTACTTACATGATGATGAACAAATTA  
AGGGTGCACCTTCGTCTCGCGACATATTTCTTGATAGGGTTAAGGATTTAAACCCTTGATTGTGACTATTG  
TTGATGAAGATTGTGATTTGGGAAACCAACTACTTTAACATCAAGAATAGCCACTTGTTTAACTATCTAT  
GGATACCTTTTGATGCATTAGAGACATTTTGCCTAAGGATAGTAAGCAAAGGCTAGATTATGAAGCTGA  
GATTGGCCACAAAATTGAAAACATTATTGGATTTGAAGGGAACCAAAGGATAGAGAGATTAGAGAGTTG  
CAACAAGTTCTCAAAAGGATGGAAAATAGTGTTACATGAGTGTACCTTTTAGTGAAGAAACAATAAAG  
GAAGTCAAGTCATTGTTGGATGAACATGCAAGTGGATGGGGCATGAAAAAGAGGAACATGACATGCTT  
GTATTAACATGGAAAAGTGCATAACTCTGTCTATGCAACATCTTGGGTCATAGTCTCACCACCCCATATGGA  
CATGAGTAGCTTATAA

Amino acid sequence:

MNSTTIPLQNPSFFNNSQSSLAGALQGCIGSLDGACLEKLLHCSALENNNDVTLAQQVMWVLNNLASSNGD  
PNQRLSWFLRALISRASRVYPNATNLHGSSNLERRLMSVTELAGYVDLIPWHRFGFCASNSVIYKAIERQTKVH  
ILDFSITHCMQWPTLIDAIAKRPEGPPSLRISVPSWRPQVPPLNVSSEEVGQRLANFAKFRDVPFEFHVIEDLNY  
DMFLSQLNPSTLQIRDDEALVNCQNWRLYLHDEQJGALSSRDIFLDRVKDLNPCIIVTIVDEDCDLGNPTTLT  
SRIATCFNYLWIPFDALETFLPKDSKQRLDYEAEIGHKIENIIGFEGNQRIERLESCNKFSQRMENSGYMSVPFSEE  
TIKEVKSLLDEHASGWGMKKEEHDMLVLTWKGHNSVYATSWVIVSPPHMDMSSL-

SIGRAS39

Solyc08g014030.1.1

Nucleotide sequence (ORF):

ATGCAAAACCCCTAATTATCATGAGAATTCATCATCATCAAGAAGTGAATCACCGGAAGGCCTTGAGCCTG  
TTTCCGATGCCAAGTGGGCTCCTAAGCTTCTCCATGAGTGTGCTACCGCGATTCTAATAAGGATTCAACA  
AAGATCCATCACTTGTTATGGATGTTGAATGAACTTGCTTCTCCCTATGGTGATTGCAATCAAAAATTGGC  
ATTTTATTTCTTACAAGCCCTTTTTGTAAAGCTACGGATACTGGCTTAAGGTGTTACAAAACCCTAACTTC  
AGCAGCTGAAAAAGCAAATCATTTGATTCTAGGAAATTGATCTTAAAGTTTCAAGAGGTAAGTCCAT  
GGACAACTTTTGGTCATGTTGCATCAAATGGTGAATATTAGAAGCATTAGATGGAGAGAATAAGCTTCA  
TATAATTGATATAAGTAACACTTTTTGTACACAATGGCCTACTTTGCTTGAAGCCTTAGCTACACGAAACGA  
TGAAACGCCACATCTTAAGCTCACGGTTGTGGTCATGGAGAGCACCCCTAGTGAAGTCTCATGTTATGAAA  
GAAGTAGCACAAAGGATGGAGAAATTTGCTAGGTTAATGGGAGTGCCTTTTGAGTTAATGTTATAAGTG  
GATTGAACCATTTGAAAGAAGCTCACAAAAGAGAGTTTGAATATAAAGAAGAGGAAGCATTGGCTGTGA  
ATTGCATTGGAGCACTGAGAAGAGTTGAAGTAGATGAAAGGGGAGCTTTTATAAGAATGATTCAATCACT  
AAACCCTAAAGTTGTGACAATAGTAGAACATGAGGCTGATTTTTCTAGCACAAAGGAATGACTTTGTTAAGT  
GCTTTGAAGAATGTCTTAGGTTCTACACATTGTATTTTGAGATGCTTGATGAAAGCTTTCCAACAACAAGC  
AACGAAAGGCTAGTGATCGAAAGGAATGTTCTAAATGCATAGTTAAGGTTTTGGCTTGTGATAATGATA  
TTGGTGATGATCAAGGATATAGTGAAAGAAGAGAAAGAGGAAATCAATGGTGTGAAAGACTTAAGGAAT  
GTTTTACCCATTTACTATAATGATGATGCTGTTGATGATGTTAAGGCTTTGCTCAAGAGGTATAAAGCT  
GGATGGTCACTTGTGCTACCACAAGCAAATCAAGAGTCACTGGAATTTACTTGACATGGAGAGAACAAC  
AAGTGGTATGGGCTTCTCATGGAACCCAGGAAAAATCAATGGAGGTAGAGACATGA

Amino acid sequence:

MQNPNYHENSSSSRSESPGVEPVSDAKWAPKLLHECATAISNKDSTKIHLLWMLNELASPYGDCNQKLAFLY  
FLQALFKCATDTGLRCYKTLTSAAEKSKSFDSSRKLILKFQEVSPWTTFGHVASNGAILEALDGENKLHIIDISNTFC  
TQWPTLLEALATRNDETPHLKLTVVVMESTLVKSHVMKEVAQRMEKFARLMGVPPFFNVISGLNHLKELTKESL  
NIKEEEALAVNCIGALRRVEVDERGAFIRMIQSLNPKVVTIVEHEADFSSTRNDFVKCFEECLRFYTYFEMLDES  
PTTSNERLVIERECSKIVKVLACDNDIGDDQGYSEERRERGNQWCERLKECFPTFLNDDAVDDVKALLKRYKA  
GWSLVL PQANQESPGIYLTWREQQVWASSWKPQEKSM EVET-

SIGRAS40

Solyc08g078800.1.1

Nucleotide sequence (ORF):

ATGGCAAACCAAACCTCAATTCCAGAATGCGGCTTGTGTTAACATTTTTGGGTCATCATCATATGACATCAA  
TCAAGAACAGCCTCCGCCCAAACGCCACAATTCGGGTACCCTTGGAGGAGCTCTATTGCCTAAAGTTCCTT  
TTTTTGATGCCAATTGTGACTTCATGTTGAGGAAACAACCATTGGGACAAATGCAGCCACAAGTTAATTTG  
CTGCCTCCTACCAGTTTCAGCCAAAGCCATTGATTGTACCTAAGCTTGAGGCAGCTGGTGGTGGTGGTAA  
TGGAATTTGATGGTGCCTCGTCATCAATTGCAGGAACAACAGTTCATTTATGACCAGATTTTTCAGGCCT  
CTGAACTATTGCTGGCTGGACAATTCTCAAACGCGCAAATGATATTGGCGCGGCTCAATCAACAGCTTTCT  
CCCATTGGGAAACCTCAAGGAGGGCTGCTTTTTATATCAAGGAGGCTCTGCAGTTGCCTTTCTTTTGGC  
TTGCACATCCACATTTTTGCCTCCAAGAAGTCCCACCCCATTTGACTGTGTGCTTAAGATGGATGCTTACAA  
GGCCTTTCCGAAATATCTCCACTTATCCAATTCATGAATTTACCTCCAATCAGGCTATTCTTGAAGCTCTT

GGGGATGCTGAGCAAATTCACATAATAGATTTTGACATAGGTTTTGGTGCTCAATGGTCCCTCGTTTATGCA  
AGAGCTCCCAAGTAGCAATAGAAAGGCAACTTCTCTAAAGATTACAGCCTTTGCCTCCCATCAACCCACC  
ACTCAATCGAAATTGGTATCATGCATGAAAGTTTAAACACAGTTTGCTAATGACGCGGGAATACGATTTGA  
GCTTGAAGTTATTAACCTGGATTCTTTGACCCAAATCTTATCCCTTATCCACCTTGAGGTCATCTGAGTG  
TGAGGCAATTGCTATAAATTTCCCTATCTGGTCTATTTCAAGCTGTCCGTTTGATTTCTTCACTTCTTAC  
TGCATGAAGCAATTATCTCCTAAAGTTGTTGATCATTGGAACGCGGATGTGAACGTACTGAACTCCCCTT  
AAAGCATCACCTCATCCATGCTCTCCAGTATTACGAGACACTCTTAGCTAGTATTGATGTGCTAATATAAC  
TCCAGACATTGGGAAAAAGATAGAGAGGTCTCTTCCAGCCTAGCATTGAGAACATGATCTTGGGGCGC  
CTCCGATCTCTGATCGGATGCCACCATGGAGAAACCTTTTTGCTTCTGCAGGATTTTCGCTGTTGCATTT  
AGTAATATGACTGAAATCCAGGCTGAATGTGTTGTTAAGAGAACTCAGGTAGGAGGGTTTACGTCCAGA  
AGCGACAGACGTCACCTGTGCTATGCTGGAAGCAGCAGGAGCTTTGTCAGCTGTGACTTGGAGGTGCTG  
A

Amino acid sequence:

MANQTFQNAACVNIFGSSSYDINQEQPPPKRHNSGLGGALLPKVPPFDANCFMLRKQPLGQMPPQVN  
LLPPHQFQPKLIVPKLEAAGGGNGNLMVPRHLQEQFIYDQIFQASELLLAGQFSNAQMILARLNQQLSP  
IGKPSRRAAFYIKEALQLPFLLPCTSTFLPPRSPTPFDCVLKMDAYKAFSEISPLIQFMNFTSNQAILEALGDAEQIH  
IIDFDIGFGAQWSSFMQELPSSNRKATSLKITAFASPSTHHSIEIGIMHESLTQFANDAGIRFEVINLDSFDPKSY  
PLSTLRSSCEAIAINFPIWSISSCPFAFPSLLHCKMLSPKVVVSLERGCERTELPLKHHLIHALQYYETLLASIDAA  
NITPDIGKKIERSLFQPSIENMILGRLRSSDRMPPWRNLFASAGFSPVAFSNMTEIQAECVVKRTQVGGFHVQK  
RQTSVLWCWKQQLLSAVTWRC-

SIGRAS41

Solyc08g080400.1.1

Nucleotide sequence (ORF):

ATGTTGGCTGGTTGTTCTTCTTCAATGAGCACACAAAGATTGGACTTGCCATGTAGTTTTGCCAGGAAAGATA  
CCTCAAGGTCCAGTCCATTAGTAGGCCAGTGGGACTTTCTGTTGAGAAGCCAATTGAAGCGAAGAACAG  
TACTTGCTCTCAAGCAGAACATTCTGCTACCGCCATCTCGACAAGTGCTCAGACATCATATGTAGAAG  
GTAGGAGAGAAAGCAAAGATGAATTTGGGAAAAAGGTAGGAGCTTGAAGAGGTATGCTGAGCAGGGA  
TGTATTGATGATGAGAGCTGCATGAGCAGAGCTAAGAGGAAAAAAGTAATAGGAAGTCAGGTGATTCT  
TCAGAAGATGGCTATGATCTGAGTTTGAAGCAATTGGGTGGTGGCGATTTCTGGTTACAATCAGGTTTCA  
ATGCGGGCGGATCAGTCCCTAATTGCAGGCCTCATCCACCTCAAGCAGCACCATTCTCCTTTTCTGTT  
CCGGAGAGGAAGAGAGTGTATGTTATGTGCCAAATGAGGTGATATCACCACTCTGCCTATGTCAAACAA  
TCCTTGGATTGAATCTGTAGTACTGAGATTACTAATTTGGCGACAAGAATGTCTCAACAAGTCAAGATC  
TTGCCAGAGAGGCCTCAGTATCAAGTGCTTCTTTAGACAGTCATGGCTTGGTTCTTAGGCCTAATGAGAA  
CTCGGGGAGCATGAAGTAGGCAATGGTTCTAGGCTACCTAATCAAATGACAGGGGTGAAGTTGTAACA  
GCACATAATGGGCATAATAACCACAGGGAGGATGATGCAGCTGAGCTGATCAGCTTACTTGTGAGTTGTG  
TTGAAGCAATTGGCTCAAGGAATGTTACTGGTGTAACTCAACTGATAGCTAGGCTAGGGCAGCTTGCCCT  
TCCAAGAGGGTCTCCAGTAAGTCGGCTAACTGCTTACTTACCGAAGCTTTAGCTTTGCGTGTGCGAGGA  
TTTGGCCTCATATCTTTCACATTATACCCCTCGGGACCTTGATCGTTTAGATGATGATAGCAGTACAGCAT  
TGAGGCTGTTGAATCAGGTTAGTCCAATTCAAAGTTCATCCATTTACATCAAATGAGATTCTGCTTAGA  
GCTTTTGAAGGCAAGGACCGGGTTCACATTATTGATTTTGACATTAAGCAAGGGCTGCAGTGGCCTAGCC

TGTTTCAGAGTTTGGCTTCTAGGCCAACCCCTCTACTCATGTTAGAATTACTGGTATAGGAGAATCAAAG  
CAGGATCTTGTGAAACAGGAGATAGACTTGTCTGAGTTTGTCTGAGGCCTGAATCTGGCTTTCGAGTTCC  
ATCCAGTTGTTGACAGGTTGGAAGATGTACGGCTATGGATGCTTCATGTAAAAGAGGGAGAAAGTGTG  
CAGTGAATTGTGTGTTGCAGATGCATAGGCTTCTATATGATAGTTCTGGGGGATCCTGAGAGACTTTTTG  
GGGCTGATTAGAAGCACAATCCCACCATTATTCTGATGGCAGAGCAAGAAGCTGAGCACAATGAGCCTA  
GCTTGAAGCAAGACTTGTCAACTCACTTAGATACTATGCTGCTGTATTTGATTCTATTGCTTTCGGTCTTC  
CATTAGACAGTCTGCCAGGATTAAGATAGAGGAGTTGTTTGTCTGGGATATTAGAAATATCATTGCTTGT  
GAAGGACGAGATAGGACTGAAAGGCATGAATGCTTTGGGAAATGGCGGAAGTTGATGGAACAAGGGGG  
TTTCAGATGCACTGGGATTACAGAAAAGGGAAGTCTCAGAGTCAAATGCTGTTGAAGATGTACTCATGT  
GAAGACTACAGGGTCACAAAGCAGGGGAATGATGATGCTGCACTTACTCTGAGTTGGTTAGACCAGCCTC  
TATGCACAGTCTCCGCGTGGACACCCATTGATGCTGCTGGAAGTTCATCCTCTTATTATCAGCCAAGTTGA

Amino acid sequence:

MLAGCSSLLSPRHRLRSEASAQFQACNFPSMSTQRLDLPSCFARKDTSRSQISRPVGLSVEKPIEAKNSTCSLK  
QNIRLPPSSTSAQTSYVEGRRESKDEFWEKGRSLKRYAEQGCIDDESCMSRAKRKSNRKSQDSEEDGYDLSLS  
QLGGGDFWLQSGFNAARSVPLIAGLHPPQAAPFSFSCSGEEESVCYVPNEVISPLPMSNPNWIESVVTEITNF  
GDKNVSTSQDLAREASVSSASLDSHGLVLRPNENLGEHEVGNRSRLPNPNDRGEVVTAHNGHNNHREDDAA  
ELISLLVSCVEAIGSRNVTGVNQLIARLGLASPRGSPVSRITAYFTEALALRVARIWPHIFHIIPRDLRDLDDSS  
TALRLLNQVSPKFIHFTSNEILLRAFEGKDRVHIIDFDIKQLQWPSLFQSLASRPNPPTHVRITGIGESKQDLVE  
TGDRLAEFAEALNLAFFHPVVDRLLEDVRLWMLHVKEGESVAVNCVLQMHRLLYDSSGILRDFLGLIRSTNPTI  
ILMAEQEAHNEPSLEARLVNSLRYYAAVFDSIAFGLPLDSPARIKIEELFARDIRNIIACEGRDRTERHECFGKWR  
KLMEQGGFRCTGITERELLQSQMLLKMYSCEYRVTKQGNDDAALTLSWLDQLCTVSAWTPIDAAGSSSSSY  
QPS-

SIGRAS42

Solyc09g010920.1.1

Nucleotide sequence (ORF):

ATGGATCCGAGGTTAATGGACATCGGAGTTCTTTGAATAATTTTCGATTTGGGAACCAACCATTACCTTTT  
TCTTCAGAGCAGAGGATGATTAATGTACCAAGATTTGGACTCATTATTAGATCAGAATCTTCTCAATGG  
TCCTAGACTTGAAAATACTTTGTCCAACACGATTTTGGTGTCTGTTGGATTATAAGTGGTGATCATTACC  
TACTAGTGTAGAATCAAGAAGTACCTTGGTGTGAGAACGACTTCAATGAAGATATTGATTTCTCGGATG  
CAGTGTGAGCTATATAAATCGGATGCTAATGGAAGAAGACATGGAGGACAAGACAGATATGCTTCAGG  
AGTCCTTGGAACTTCAAGCTAAAGAGAAGTCACTTATGAGGCCCTCGGTAAGAAGTATCCACCATCACTG  
GAGCAAAACGTGTTTACTGTTGGAACAGTGAGAGTCTGATGACTACGTTGCAGGAAGTATATACAATT  
CCACAAGTAATACTGGTGACAGTAGTGGTTACCTAGTCGATCCAAGGGGGTTAACATTTCTACCGACTG  
CAATCTTCTTACTTGAAGGCCTTTCATTTATAATACTTCTTCACTATGCTCATCAAATAGTGGGAGTAAT  
GTTGTGATGAGGATTTAGATTCTCTGTTAGTTCTTTTCGATTCTGATATACGATGAGAGTCGATCT  
ATTTTGAATTTAGAAAAGGAGTTGAAGAAGCAAGTAAGTTCTCCGACTAGTAATAAGTTGTTGAACA  
GTATAGATATAAATGGCTTGCCATCTCGGGAGCCCATAGGCAAAGTCTTATGCAGCTGCTCAGGTGGA  
GGAAAAGGATGAGGGAGAGACTTACCAACTGAGGGGAGAGGGAAGAAAATCCTCTGAGGGGTGATA  
ATAATATCGAAGAAGAAAGAGTAGCAAACAGGCTGCAGTTTTTACTGAATCAACTCTACGATCCGAGGA  
GTTTGTATCGTCTTGTGTAATAGCATGGGGAAGGGAGGAGAAGCATTAGAAGCTTATCAACAAAACCTG  
AGGAATGCTAAAAGCAAACTACAGTGCAGATATCAAAAAATCAAAGGAGGAAAGGGCCGGGGGAA

GAAACAGGGTGGAAAGAAGGAAGTCATAGATTTGAGAACTCTCATGATAAATTGTGCGCAAGCTGTTGC  
TGCTGACGATTCCAGGATTGCGAATGAACTTTTGAACAAATCAGACAACATTATCCCCATTTGGAGATG  
GAAACCAGAGATTAGCTCATTGCTTTGCAGATGGCCTCGAGGCGGTTTGGCTGGTACTGGTAGCCAGAT  
ATATAAAGCTCTTGTCAATAAACGAACATCTGCAGCTGATCTTTGAAGGCCTACCATTTGTATCTTGCATC  
TAGCCCATTAGAAAGATCTCAAGTTTTGCTTCAAACAAGACAATCATGCTAAAGGCAGAGAATGCAACA  
AGGGTTCATGTTATTGACTTTGGCATCCTGTATGGCTTCCAATGGCCTACATTCATCCAACGTATTGCAGAA  
AGAGAAGGGGGGCCACCAAGGCTTCGTATTACTGGCATAGAGTTCCGCAACCAGGCTTCAGGCCAGCG  
GAACGGATTGAAGAAACAGGTCGCCGTTTAGCTGATTATGCTCGATCCTTTAATGTTCCATTTGAATACCA  
TGCAATTGCAAAGAAATGGGAGAGCATTACAGTTGAGGATCTAAAACCTCGACAAAGATGAATTTCTTGCT  
GTCAACTGCTTGTATCGTTTTAAGAACCTGCATGATGAGACTATTGCAGTTGAAAGTTCAAGAACTATCGT  
ACTCAACCTCGTAAGGAAGATCAATCCAGATATCTTCGTGCATGGTATTGTCAATGGGGCTTATAGTGCCC  
CATTTTTCGTCACACGGTTTTCTGAGGCCTTGTCCACTTTTTCTGCACTTTTTGATATTCTTGAAACTATTGT  
TCCCCGTGAGATTCCAGAAAGACGATTAATTGAGAGAGAGATATTTGGGAGGGAAGCCCTGAATGTCAT  
AGCTTGTGAGGGGTGGGAAAGAGTTGAACGTCCAGAGACCTACAAGCAGTGGCAAGCTCGTATTATGGG  
GGCAAGGTTTACACAGATACCTTTTGACCGGGAGGAATTTGTGAATAAGGCAATAGAAAAAGTGAGGTT  
AGGATATCATAGAGACTTTGTAATAGATGAAGATAGCCAGTGGTTGTTGCTGGGGTGGAAAGGAAGAAC  
AATTTACGCCTTATCTTGTGGAAACCTGTGTAA

Amino acid sequence:

MDPRFNHGRSSLNFRFGNQPLPFSSEQRMINVPRFGLIYSDQNLNNGPRLNENFVQHDFGAVGFISGDHLPT  
SVESRTDLGVENDFNEDIDFSDAVLSYINRMLMEEDMEDKTDMLQESLELQAKEKSLYEALGKKYPPSLEQNVF  
TVRNSPDDYVAGSIYNSTNTGDSSGYLVDPRGVNISTDCNSSYFEGLSFHNTSSLCSNSGNSNVVDGFLDSP  
VSSFRIPDIYDESRILNFQKGVVEASKFLPTSNNKLLNSIDINGLPSREPHRQTAYAAAQVEEKDEGETSPTTEGRK  
KNPLRGDNNIEERSKQAAVFTESLRFSEFDIVLLNSMKGGEALEAYQQNLRNAKSKTTVQISKSKGGKGR  
GKKQGGKKEVIDLRTLMINCAQAVAADDSRIANELLKQIRQHSSPFGDGNQRLAHCFADGLEARLAGTGSQIYK  
ALVNKR TSAADLLKAYHLYLASSPFRKISSFASNKTIMLKAENATRVHVIDFGILYGFQWPTFIQRIAREGGPPRL  
RITGIEFPQPGFRPAERIEETGRRLADYARSFNVPEFYHAIKKWESITVEDLKLKDEFLAVNCLYRFKNLHDETIA  
VESSRTIVLNLVRKINPDIFVHGIVNGAYSAPFFVTRFREALFHFSALFDILETIVPREIPERRLIEREIFGREALNVIA  
CEGWERVERPETYKQWQARIMGARFTQIPFDREEFVNKAIEKVRGLGYHRDFVIDEDSQWLLLGWKGRTIYALS  
CWKPV-

SIGRAS43

Solyc09g066450.1.1

Nucleotide sequence (ORF):

ATGATGAAAGGAGAGTCTGAATTAATCCATCAACATACTCCTCTTGATCAACCCAATGAACAATGGGATTA  
TTGTTCCCTAATCATCCCTCCAAGACATTAATCACGAAAATCGCGCTAATAATCCTGATCAAAGAAATGA  
ACTTTCCAATGGGTTGAGCAAGTCACTAGGCAACTACTCATTGAAGATTTGCCTGAAAATGAATTTAGTG  
ATACAGACACAGCGACATATCATGTCTCTGCATTATTAGGAGAGCTAAGGCCTAAGAAAATTGCGCGAAG  
AGATTGTAACCTCTGAGGGGATTGGAGGACAACAACAACATGAATGGAACCTCTAGTACTCATGACGATCAT  
CATGTAGCGAGAGATGAGATGGGTGTTAAAGGAATGAGTGGACTAGATGAACAAGGACTAAACTTGATC  
ACACTTCTTTTGAAGGTGCTGTTGCTATATCAGTTGATAATTTGGGAGAAGCTCATAGAGTGTTACTTGA  
GTTAACACAAGTGGCATCACCATATGGACCCTCTGTGCTGAAAGAGTAGTGGCTTATTTTGCCAAAGCAA  
TGGAAGTAGAGTCATCAACTCATGGTTAGGTATATGTTCCCTTTGATCAATTACAAGACTGTTACTACT

GCTTTACAAGCCTTCAACAACATCTCACCATTATAAAAATTTGCACATTTACCTCTAACCAAGCAATCCTTG  
AGGCATTTTCATCGTCGAGACAGAGTCCATATCATTGATGTAGACATCATGCAAGGTCTACAATGGCCGGC  
TTTGTTCACATCCTCGCCACTCGTATGGAAGGGCCTCCACATGTTACAATGACAGGAGTAGGTACATCAA  
TGGAACTATTGATTGAGACAGGAAAACAACCTTTCCAATTTGCCAAACGCCTTGGTATGTCATTTGAGTTC  
CATCCAGTTGTGGGGAAAACAGGGGAAATCGACATATCAACGTTCAAAATTAGCAGGGGAGAGGGCTATA  
GCCATACATTGGGTGCAACACTCTTTGTATGATGCCACTGGCCCTGATTGGAAAACAATGAGACTCCTCCA  
ACAACATCACCAAGAGTTGTGACACTAGTAGAACAAGAAATAGCACTAGGGGGTAGTTTCTGGACCGG  
TTCGTGGGATCCCTCATTACTACTCAACCATATTCGACTCGTTAGGAGCCTTCTTGAGAGTGATGATTCA  
AGCAGGCATAGTGTGCAACACGGCCTACTTTACAGAGAAATCAATAACATATTAGCAATTGGAGGGCCAG  
CAAGAAATGGGGAGGATAAGTTTAGGCATTGGAGGAGTGAACATCAAAAAATGGATTCAATCAAGTGC  
CAATGAGTACAAATTCATGGCACAAGCTCAATTGATACTAAATATGTTCCCACCAGCTCATGGTTATAGC  
CTAGTACAAGGTGATGGAACATTAAGGCTAGGGTGAAGGATACTAGTTTGTACTGCATCTGCATGGA  
CCTCTCAAATTCTAGATAA

Amino acid sequence:

MMKGESELIHQHTPLDQPNEQWDYCSNPNSKTLITENRANPDQRNELSQWVEQVTRQLLIEDLPENEFSD  
TDTATYHVSALLGELRPKKIARRDCNSEGIGGQQQHEWNSSTHDDHHVARDEMGVKGMGLDEQGLN**LITLL**  
**LEGAVAISVDNLGEAHRVLELTQVASPYGPSAERVVAYFAKAMASRVINSWLGICSPINYKTVHTALQAFNNI**  
**SPFIKFAHFTSNQAILEAFHRRDRVHIIDVDIMQGLQWPALFHILATRMEGPPHVMTMGVGTSMELLIETGKQLS**  
**NFAKRLGMSFEFHPVVGKTGEIDISTFKISRGEAIAHWVQHSLYDATGPDWKTMRLLQQLSPRVVTLVEQEIAL**  
**GGSLDRFVGLSHYYSTIFDSLGAFLSDDSSRHSVEHLLYREINNILAIGGPARNGEDKFRHWRSELSKNGFIQ**  
**VPMSTNSMAQAQLILNMFPPAHGYSLVQGDGTLRLGWKDTSLFTASAWTSPNSR-**

SIGRAS44

Solyc10g086370.1.1

Nucleotide sequence (ORF):

ATGAGTTCACGAGAGATATCCATGGATACAATTATGGAAGATGAAGATTCCTTTGTTTCTAATACAAATGC  
GATCATCTACGCTGCTTCAGATATCTCAGGCTGGACCCACAGTTTGTCTCAGATAACAATATTCTAATTC  
ATCCTCTTACCAGTGTAGACGAGCACCATCAGCAGATTTCAACTGCTGCCGGTGACGGTGGTAAAGAG  
GATGATTCGATGATTGTATCATCAAGTGCATCTCCAGCTGGTTAATGATAATAAGCAAATTGATGATCA  
CCAAGAGATTAGGATATTTAACGTTGATTTAGTTCACTTTGCAACAACACTTGCAAGTGGATTTGAATCTC  
ATGGTGGTTTATTGCCGATACTGGTCGTACAGTGAACGGAGACGCTAGTGTGTTTCTGTCAATATCATA  
GTAGCTTGCCAAGGCAGACAAAAGAAGTACTCATGTCTAGCGGACAGATTAATTCGTAACATAATAA  
GGAGATTTGAAGTTGCACAATTTGGAGGAGCAATGAAGAAAGTGGCGACACATTTGCAGATGCTTTCGA  
TAATAAGATTCACAGATTGATTCCACAAGATATTGTTGGATTATCCTATAACCATACGAGTGTCTACGGGA  
ACTGCCTCTTCTCAAATTTGCCACTTCACTGCCAATCAATCAATTTTGGAGGCCTTTGCCAATTTCAATAG  
AGTACATGTCAATTGATTTAGCTTCAATCAAGGTTTGAATGGCAGGCACTTTTGCAGGCTCTTGCTTTGC  
GTCCTGGCGGTCCACCAGCTTTTCGGCTCTCAGGAATTAGTGGCCAACCTAAGTCTGATGATGGTAGCGA  
TCCGTTACAGGAAGTTGGTTTAAAGCTCGCCAATTTGCAGAGTCAATTGGTGTGCAATTTGAATTCTGTG  
GATTTATGGCCTATGCTTTAGCTGATCTTGAAGCATCGATGTTGAACATTAGACCTAGTAATGAGGAAGCA  
GTGGCTGTGAACCTGTTTTCGAGCTTCAACCTCTGTTTTCCATTCCAGGGGCAATTGAGAAAGTGATGGA  
TTTAATAAAAACAGATAGAGCCCAAGTTGTGACCATCACCGAACAAGAAGTGAATCACAATGGGAGAGT  
CTTTAGTAGCAGGATTATTGAAGCATCACGTTACTATTCAACAATGTTTGTATTTCTGGAGAATTTAGAATC

AATTAGTCCCAACAATTTAGACACGGTCATGGAAAAGCAGTGCCTAGATGTAATGGTGTGAGAGATCTAT  
AATTTGGTGGCTTGC GAAGGGACTAAGCGAATTGTGAGACGTGGGACTCTGGGTCAATGGCAAGTGAGG  
ATCTACTCTGCAGGGTTCAACCTGGTTCCCTGACTTCAGATACTTACAAACAGGGAGCTATGTTATTGGC  
CTCTTTCCCAAATGCAGAGGGATATAAAGTAGAAGTAAAGATGGGTCTCTTATGCTGAGCTGGAATAGT  
CTCCCTCTCATAGCCAACCTCCACTTGGCGGCTATGTAGCCAAGTCTAG

Amino acid sequence:

MSSREISMDTMEDEDSFVSNTNAIYYAASDISGWTHSLFSDNNIPNSSSSTSVDEHHQQISTAAGDGGKEDDS  
MIVSSSASSSWFNDNKQIDDHQEIRIFNVDFSSLNNTCSGFESHGGLLPDTGRVNGDASVLLVNIIVACAKAD  
KKNYSCLADRLIRNIIRFEVAQFGGAMKKVATHFADAFDNKIHRLIPQDIVGLSYNHSTVYGNCLFLKFAHFTAN  
QSILEAFANFNRVHVIDFSFNQGLQWQALLQALALRPGPPAFRLSGISGQPKSDDGSDPLQEVGFKLAQFAES  
IGVEFEFCGMAYALADLEASMLNIRPSNEEAVAVNSVFELQPLFSIPGAIEKVMDLIKQIEPKVVTITEQEVNHN  
GRVFSRIIEASRYYSTMFDFLENLEISPNLDTVMEKQLDVMVSEIYNLVACEGTRKIVRRRGLGQWQVRIYS  
AGFNLVPLTSDTYKQGAMLLASFPNAEGYKVEVKDGLMLSWNSLPLIANSTWRLCSQV-

SIGRAS45

Solyc10g086380.1.1

Nucleotide sequence (ORF):

ATGAGTTCACTTGAGATATCCATGGATACAATTATGGAAGATGAAGATTCCTTTGTTTCTAATACAGAAGC  
AATCATCTACGCTGCTTCTGATATTTAGGCTGGACTCACAGTTTGATCTCTGATCACAATATTCCTAATTC  
GTCGTCTTCTACCAGTTTAGACGAACACCACCACCATCACCAGCAGATTCGACTGCTGCTGGTGGCGGTG  
GTAATGAGGATGATTCAATGATTGTATCATCATGTGCTTCTCCAGATGGTTAATAATAATAAGCAAATT  
GATGATCAGCAAGAGATTAGGATATTTAATGTTGATCTCAGGGCACTTTGTGAAAACAGACTGAAATCTT  
GTGGTGGATCTGAATCTCGTGACTGTTTAGTATACGAAGAGAGTAGTGTAGGCTTGTCAATACGTTGAT  
GGCTTGTGCCGAGGCGATCCAAGATAACAACCTTAAGTCTAGCGGATGAACTAATCAGTGATATAAGAAGA  
ATTTAGTTTACAAAATGGGAGGAGCAATGAAGAAAGAGGCTACTTATTTGCAGACGCTTTGATCATAA  
GATTCACAGAACAATTCGGAAGATATTGATGAATCATCCTATCCCAAGGATCAAGTCTTGAGTATGAGCT  
TCTACGATAGCTGCCTCTTCTCAAATTCGCTCACTTCATTGCCAATCAATCCATTTTGGAGGCCTTGCAG  
ATTCCAAGAGAGTACATGTAATTGATTTAGCTTAAATCAAGGTTCACAATGGCCAGCACTTTTACAGGCT  
CTCACTTTGCGTCTGGTGGTCCACCGGCTCTTCCGCTCACAGGAATTCGTGGCCACTCTCAGCCTGAGGA  
CACTACCGATGCCTTACAAGAAGTTGGTCCGGGAGCTCGCCCAACTGCAGAGTCAACAGGTGTAGAAATTT  
GAGTTTCGTGGATTTCGTGGTCCATACTTTAGCTGATCTTGAAGCACAATGTTGAATATTAGACCCAGTAA  
TGTGGAATCAGTGGCCGTGAATCTGTTTTCAAGCTTACCCTGTTTTCCATTCCAGGAGCAATTGAGA  
AAGTGCTGGATTTGATAAAACAATAGACCCGAAGATTGTGACCATTGCTGAACGTGAAGTGAATCACAA  
TGAGACTGTTTTATGAACAGGATTAAGGAAGCATGGTATTACTATTCAACAATGTTTGATTGCTGGAGA  
ACTCAGAGTGGACTAAGCGCAGCACTATAGACTTGGAGATTGCGGCAGAGCACCTAGGGAGGGAGATCT  
ATAATTTGGTGGCTTGTGAAGGGACTAAGCGAGTAGTGAGACACGAGACGTTTGGTCAATGGCGAGTGA  
GGTTAATTCTGCAGGGTTCAACCTGGTTCCCTGGGTTCAAATACGTACAGACACGCAAACATGTTGTTG  
GCCTTGACACAAATGGAAAAAGATATAGAGTAGAAGAGAAAGATGGGTGCTTATGTTGAGTTGGCAT  
AGTCGCCCTCTCATACCACATCTGCTTGGCGTGGCTATGTCGCCAATTCTAGGGATTAG

Amino acid sequence:

MSSLEISMDTMEDEDSFVSNTNTEAIYYAASDISGWTHSLISDHNIPNSSSSTSLDEHHHHHQQISTAAGGGGNED

DSMIVSSCASSRWFNNNKQIDDQEIIRIFNVDLRALCENRLKSCGGSESRDCLVYEESVRLVNTLMACAEAIQ  
DNNLSLADELISDIRRISVSQMGAMKKEATYFADALYHKIHRTNSEIDESSYPKDQVLSMSFYDSCLFLKFAHF  
IANQSILEAFADSKRVHVIDFSLNQGSQWPALLQALTLRPGGPPALRLTGIRGHSQPEDTTDALQEVGRELAQLA  
ESTGVEFEFRGFVVHTLADLEAPMLNIRPSNVESVAVNSVFKLHRLFSIPGAIEKVLDIKQIDPKIVTIAEREVNH  
NETVFMNRIKEAWYYSTMFDLLENSEWTKRSTIDLEIAAEHLGREIYNLVACEGTRVVRHETFGQWRVRFNS  
AGFNLVPLGSNTYRHANMLLALYTN GKRYRVEEKDGCLMLSWSRPLITSAWRGVVANSRD-

SIGRAS46

Solyc10g086530.1.1

Nucleotide sequence (ORF):

ATGGATCCAAGGTTCAATAGATTTCCAACAACGTAAATGGATTCAATCTGGAGAACCAATCCTTACTAAG  
CTTTTCGGATAATTGGAAGAATAATGAACCTATAATTGGGGCTATTTATCCAGATCAGAAAATAGTCAATG  
CTCCAACATTTGAAAATAGTTTTATCCAACAGACTGTTCCATCTCTTCAAATGACCCCTCCACAACAAGCA  
ATATAGCATTGACTTCTGAGATGGGTACTGAGGATGAATACAATGAAGATTTTGATTTCTCGGATACGGTT  
TTGAGCTATATAAATCAGATGCTCATGGAAGAAGATATGGAGGACAAGACACATATGCTTCACGAGTCGT  
TGGAACCTCAAGCAAAAGAGAGATCATTTTATGAGGCCCTTGCAAGAAGTATCCGCCTTCACCTCACCA  
GAACCTGGCCATTACTGAACAGAACGGTGAGATACCGGAGGACTATTACTCAGCAAGTCTGTATAGCTCT  
ACAAGTAATGTCATTGACACTAGTGGTTACCTAATTGATCCAAGCATTTCAAATGATCATAATTACTCTTAC  
GAACAAGGCCTTTTTATTTGTAATGGTCCTTACTCTTCGATTAGCTCATCGAATAGCATAAATAATCTTGG  
GATGGGTTCTTGGACTCTCCTGTAAGTCCTTTCATATACCTGATATATAAATGATAGTACCCCAATTTGG  
AAATTTAGGAAAGGAGTGGAAGAAGCGAGCAAATCCTACCTACTTATAGTAAGTTGTTGGACAATGTGG  
TTATCAACGACTTGCTACCTCAGGCGAAAAGAGGAGAAAGTGGTTGTGCGGCAGCTCAAGTGGAGAAAC  
GGGATGTGGGAGCGACTTCACCTACCGGACCGAGAGGGACGAAAAATCCTCATAGAGATGATAGGGATT  
CAGAAGAAGAAGAAGAAGAAGAAGCAAGCAAGCTGCAGTTTATGCAGAATCTACAGTTCGCTCAGATG  
AGTTTGATGTAATTTTGTTCATAGCATGGGGGATGGAAGGGAAGCATTGACAGCTTATCGTGAGAGCTT  
GAAGAACGCTAGAACAAAACCTACAGTGCAATCAAAGGATTTGCTGTAGGGAGAGGAGGCCGCGGGA  
AGAAACAGTCTGGTAAAAAGGAAGTCATAGATTTAAGGTCTCTTTAATAAATTGTGCACAGGCTGTTGCT  
GCTGATGACTGCAGGAGTGCAACTGAACTGCTGAAACAGGTTAGACTCCATTCATCTCCTTTTGGAGATG  
GCAACCAGAGATTAGCTCATTGTTTTGCAGATGGTCTGGAAGCACGTTTGGCAGGCACTGGTAGCCAGAT  
TTATAAGGCCCTCGTCAATAAACGAACATCAGCAGCTGATTTTTAAAGGCCTATCATTGTATCTTGCATC  
ATGCCCATTCAGAAAAGATTTAGGTTTTACCTCAAACAAGACGATCATTAGAAAATCAAAGCATGCTACAA  
GGGTCCACATCATTGACTTTGGCATCCTCTATGGCTTTCATGGCCTACGCTTATTCAACGTATTGCAGCAA  
GAGAAGGTGGACCACCAAATCTTCGTATAACTGGTATAGAATTTCTCAACCTGGCTTCAGGCCAGCAGA  
AAGGATTGAGGAAACAGGACGCCGTTTGGAGCATTATGCCAAGTCCTTAAATGTTCCATTTGAGTACCAA  
GCAATAGCAAAGAAATGGGAAACCATCAGAGTTGAGGATCTAAAGCTTGAAAAGGATGAGTATCTTGT  
GTCAATTGTTGTATAGATTTAAGAACCTGCACGATGAGACCGTGTATCTGACAGTTTCGAGAACTCTCGT  
TCTCAATCTAATAAGGGAGATCAATCCAGACATTTTCATCCATGGGATTGAAATGGGGCTATAGTGCC  
CATTCTTTGTCACACGGTTCCGTGAGGTCCTGTTTCATTTTTAGCACTTTTTGATATGCTGGAAGCTAATG  
TGCCCCGGGAGTTCCGAAAAGACTGTTAATTGAGAGAGAGATCTTTGGGAGGGAAGCCCTCAATGTCAT  
AGCTTGTGAGGGATGGGAAAGAGTTGAAAAGCCAGAGACATACAAGCAGTGGCAAGTTCGTCATCTAAG  
GGCAAGGTTTACACAAAACCTTTTGGCAAGAGGAGATCATGAATATGGCAGTAAAAAGGTGAGAAC  
AAGCTATCACAAAGACTTTATAATCGATCAAGATAACAAGTGGATGTTGCTGGGGTGGAAAGGGAGAAC  
GATCTACGCCTTATCTTGTGGACACCTATTTAA



Amino acid sequence:

MDPRFRNRPPTTVNGFNLENQSLLSFSDNWKNNEPIIGAIYPDQKIVNAPTFENFSFIQQTVP SLSNDPSTTSNIAL  
TSEMGTEDYNEFDVSDTVLSYINQMLMEEDMEDKTHMLHESLELQAKERSFYEALGKKYPPSPHQNLAITE  
QNGEIPEDYYSASLYSSTSINVIDTSGYLIDPSISNDHNYSYEQGLFICNGPYSSISSNSINNLGDGFLDSPV SPLHIP  
DIYNDSHPIWKFRKGVEEASKFLPTYSKLLDNVVINDLLPQAKRGESGCAAQVEKRDVGATSPTGPRGTKNPH  
RDDRDESEEEERRSKQAAVYAESTVRSDEFD VILLHSMGDGREALTAYRESLKNARTKPTVQSKGFVAVGRGGRG  
KKQSGKKEVIDLRSLINCAQAVAADDCRSATELLKQVRLHSSPFGDGNQRLAHC FADGLEARLAGTGSQIYKAL  
VNKRTSAADFLKAYHLYLASC PFRKISGFTSNKTIIRKSKHATRVIIDFGILYGFQWPTLIQRIAA REGGPPNLRIT  
GIEFPQPGFRPAERIEETGRRLSDYAKSFNVPFEYQAIKKWETIRVEDL KLEKDEYLVNCLYRFKNLHDET VLS  
SSRTLVLNLIREINPDIFIHGIVNGAYSAPFFVTRFREVLFHFSALFDMLEANVPREFPERLLIEREIFGREALNVIAC  
EGWERVERPETYKQWQVRHLRARFTQTPFEQEEIMNMAVKKVRTSYHKDFIIDQDNKWM LLGWKGRTIYAL  
SCWTPI-

SIGRAS47

Solyc11g005610.1.1

Nucleotide sequence (ORF):

ATGGAGTGTGAAAATTTCAACCAAATTACATTAATCCATATATTGAGTATAGCAACTTAGAGACCACATT  
TTCTTGGAAATAATCCTAGTATTATTAACCTCAATGTTCAATCCAAGATTTTGTAACTATTGTTAATGATGTT  
GACATACTAGACTATTTCCCAAATGACTTCGATTTTCATCGATGGAGATGTAGACATCCCCCTCAAACAC  
GCAACAAAAAATTATTCAGGGAGATACTGAACTCTCGAGAGAGGGTCAAAAATCACGTGTCTGCAATCCT  
CGTCTCAAATTCCTCAAGATCACCTCATGGAGGAAACAAGTGAAGTCACTTCTTCTTATGGGAGCTGA  
GGCTATTGAAGCTAGAAATCTTGATCTTGCTTCTATAATTGTTTTGAGGCTAAATACAATACTTCTTAATCA  
AGAAAAAGAGAAAAATCCCTGTTGAAAGATTGGCTTTGTATTTACACAAGCCTTGTATGCAAGACCT  
TGAATAATTCATCACATGAATTGTTGAATCTAAATCAATATCAATCAGAGTTCACATCTTCAATGACCGCGT  
TTCAAATGCTTCAAGAAATCTCCTTATGTTAAGTTTGCTCATTTCACCGGAATCAAGCAATCTTGAAG  
CAACAAAAGGGAGTCAACAAGTTCATATATTGGATTTGACATCATTGAAGGCATTCAATGGCCTCCTTTG  
ATGGTTGATTTGGTTGAAAGAGGAAATACAAATCTTCTCTAAGGATCACATCACTTGTAGTGATCATT  
AAACTCATGTCATGTAGAAAAACAGGCCAAAGACTTCAAGAATTTGCTAATTCAATCAATCTTCTTTTCA  
GTTTGATCAAATCCTCTTAGAGGACTTAGAAAAGTTACAAGTTGTTGTTGAGGGTCATAACAACCTTAATAG  
CTAATGTTATGATCCACCAACTTACATGCCACAAAGGGGAAGTCACTAGTCAAGACATTTTTCAATGGA  
CTAAGAAAATTGTCCTTAACTTGTGTCTTAGTTGAAGAAGAGCTTCAATTTATCAAAAATCTCATCT  
ATGCCATTTGTTGAGTCTTTTGTGAGGCTTTACATCATTACACAACAATATATGATTCAATCTTGGAGGT  
TTTGGTGGAGGATACAAGTTAGCATTAAAGGTCATTGAGAAGGAATTTTTAAGAGTTAGAATTTGGATT  
CATTAAAGACAATCCCTAGTGATAAATTAGAAAAGGAAAAGATGGAGTAAAGGGCTATATTCATTAAGG  
TTTTAGACAAATCCAATGAGTTCAAGTAATGTGAGACAAGCCAAGCATTGGTGAGTTTGTAGTGA  
GGGTATTGGGTGCAAAATGAACAAAGCAAATTTGGCTTTGTGTTGAAATCAAGGCCTTTGACAAGTGCTT  
CCATTTGGGTTCTATATCATCAACTTCTAGTCCTTCAAGCTCAATATCTTTTTAA

Amino acid sequence:

MECENFQPNYINPYIEYSNLETTFSWNNPSIINPQCSIQDFVTIVNDVDILDYFPNDFDFIDGDVDIPLQNTQQKI  
IQGDTELSREGQKSRVCNPRKFLQDHLMEETSVDLLL MGAEAEARNLDLASIIVLRNLNLPNQNRENSPVE  
RLALYFTQALLCKTLNNSHELLNLNQYQSEFTSSMTAFQMLQEISPYVKFAHFTANQAILEATKGSQQVHILDFD

IIEGIQWPPLMVDLVERGNTNSSLRITSLVSDHSNSCHVEKTGQRLQEFANSINLPMFMDQILLEDLEKLQVVVE  
GHNNLIANVMIHQLHMPQRGSSLVKTFNGLRKLSPKLVVLEELFNLSKISSMPFVEFFCEALHHTTYDSIL  
GGFGGGYKLLARVIEKEFLRVRILDSLRQFSPDKLERERWSKGLYSLKGFRRQIPMSSSNVRQAKHLVSLFSGGYW  
VQNEQSKLALCWKSRPLTSASIWVPISTSSPSSSISF-

SIGRAS48

Solyc11g013150.1.1

Nucleotide sequence (ORF):

ATGGCTATGATGGTTGATGAAACCATCACGGATTTTGATTGTTATGGTAGTTAAGCATCGCCACTACAAC  
TATCACTACTACTACAGCAACAACCTCTTCATCTTCATGGAATGACTGGTCGCCGTTTTTGATTGGGATG  
GTTTTCCGGTGGTGATAATTTCAAGATCTAATTGAATCTATGGTGCAGGGATCGGGTAATTGCTTTTACA  
AATCCGAACATCAAGATTGTGCTGAGTTTATGGAGGAAGAAGAAGAATCAGGTGACTCCAATAACAATCA  
ATCGGAAGATATTAACGGGCTGAAGCTTGTTCACCTTCTCATGGCAGCAGCGGAGGCATTAACGGCGTT  
AACAAAAGCCGTGAGTTGGCTCGAGTGATATTGGTTCGGCTCAAGGAATTAGCGTCCCAAACGGCGCTA  
CTAATATGGAGAGATTGGCTGCGTATTTCACTGACGCCTTGCAGGCGTTGATGGCTTCCGGTACGTTACAC  
ACTAAACACATGTTTTCCCAAATTACAAAGACGAACACCGTCAGGGAGATGTACTTGCAGCTTTTCAGCT  
ATTACAGGATATGTCTCCTTTGTTAAATTTGGGCATTTTACAGCAAATCAAGCTATATTCGAATCGGTAAC  
ACACGATCGGAGAGTTCATATTATCGATTACGATATAATGGAAGGAATCAATGGGCATCGTTAATGCAA  
GCTTTGGTGTCTAGAAAAGATGGACCTCCAACCTCCGCATCTTCGGATCACAGCATTGTCAAGAAGCGGCA  
GCGGCCGTCGGTCTTCGGGACGGTCCAAGAGACCGGCCGTCGGTAACTGCTTTCGCTGCTTCTATCGG  
TCAGCCATTTTCATTCATCACTGCAGATTGGACTCAGACGAAATATTTAAGCCAACCAATGTCAAGTTAGT  
TAGAGGGCGAAGCTCTAATTATTAATTGCATGCTTCACTTGCCCTATTCAGCTATCGAGCCTCGGATTCAGT  
CGCTTCTTCTATCTGGATCGAAGACACTGAATCCGAGACTTGTGACCTTAGTGAAGAGGAACTAAGG  
CCGATAGGAGACGAAGAAGGGTTCGTGGGTCGGTTCATGGACACTTTACATCACTACTCAGCACTTTATG  
ATTCGCTTGAGGCAGGATTCCCTTTGCAAAGCCGAGCTCGGGCATTGGTGGAGCGGGTATTCTCGGGCC  
CAGAATAACGGGTCATTGGCTCGGATATACGGGCCCCGAGGAGAAGGGGAAAGGTGCTCATGGGGGG  
AGTGGTTGAGTGGGGTGGGGTTTTGTGAGAGTAATAAAGCTTTGCAAATCATTGTCAAGCAAATTTGTT  
GTTGGGGCTATTCAATGATGGGTATAGGATGGAGGAAATTTGGACCAATAAACTGTTTTAGGATGGAA  
GTCCCGCGTCTACTTTCTGCTTCTATTTGGACCACAATGGATATTGACTTGTA

Amino acid sequence:

MAMMVDETITDFDCYGSLSIATTTITTTTATTSSSSWNDWSPVFDWDVFSGGDNFQDLIESMVQSGNCFYK  
SEHQDCAEFMEEEEESGDSNNNQSEDINGLKLVHLLMAAAEALTGVNKSRELARVILVRLKELASPNGATNME  
RLAAYFTDALQALMASGTLHTKHMFSPPNYKDEHRQGDVLAQFLLQDMSPFVKFGHFTANQAI FESVTHDRR  
VHIIDYDIMEGIQWASLMQALVSRKDGPPPHLRITALSRSGSRRSFGTVQETGRRLTAFAASIGQPFSFHHCR  
LDSDEIFKPTNVKLRGEALIINCMHLPHFSYRASDSVASFLSGSKTLNPRVLTVEEELRPIGDEEGFVGRFMDT  
LHHYSALYDSLEAGFPLQSRARALVERVFLGPRITGLSARIYRARGEGERCSWGEWLSGVGFCESNISFANHCOA  
KLLGLFNDGYRMEIIGNKLVLGWKSRRLLSASIWTTMDIDL-

SIGRAS49

Solyc11g017100.1.1

Nucleotide sequence (ORF):

ATGGGAGATATTGTAGATCATGAAGAAGAGTTGTTGAGTCTTAGACTTGCTATAGTCAATGATTCATCATG  
TTGTGATAATCATATCAATAAGAAGATCATCAAGAAGAGAAAAAGGAGGGAATTAATGATGAATTCATC  
AATACTTGGGATTTAAATGAAAGTAATTGTGAAGGAAAAATATTAAGTCTTTAGAGTTGAGAGAAATGA  
TGTTAAAAAATGATGTAAAGAAAAAAGGTCATATTATTAATGATGGAAAAGGTCTACACCTAATCCATTCA  
TTGCTTATTTAGCCACATCTATTGATGAAAATAGCATGAATTTAGCTATTGAAAATCTACATGAATTGTAC  
CAAAATGTTACCTTATTTGGTGATTCAATCCAAAGAATGGCTGCCTATTTTGTGATGGATTAATAGCAAG  
ACTATTAACGCGAAAATCGCCATTTTATGACATGATAATGAAGCCACCAACACAAGAAGAAGAGTTCTTG  
GCTTTCACTCAATTCTACAAGGTTTCTCCTTTTTATCAATTTGCTCATTTCACATCTAACCAAGCCATTCTGA  
AGTCTTTGAGAAAAGAATTAGAATATAACAATGGATTATTGCATGTTATAGACTTTTTTGACATATCTTATGG  
ATTTCAATGGCCTTCTCTAATCAATCTCTATCAGAAAATCAACCACATTGAATAGAATTTCTCTCAAGATC  
ACTGGATATGGAAGAATCGATGAATTGAGAGAACTGAGACAAGACTTGTTAGTTTTGCAAAGGGTT  
TTCGAAATTTATCTTTGAGTTTCAAGGGTTTTAAGTGGATATAAACTGAGTAACCTAACAAAAAGGAAA  
AATGAAACATTAGCTATAAATTTGATCTTTCATTTGAACTCATTAAAGTACTTATTCCAAGATTTCAAAGACA  
TTGAAAGAAGTACATGATCTTTGTCCTTCTATAGTTACTATAGTGAACAAGAAGGATGTAATAATCCCTAA  
AACAAATTTTCATGCCAAGATTCATGGATTTCATTGCATTATTTGCGGGCTATGTTTGATTTCATTAGATGATTG  
TTTACCTATTGATAGTATTGAAAGATTGAGTATTGAAAAAACCATCTTGGGAAAGAGATCAAGAATGTG  
TTGAATTATGATAATTCATCATCAAGATATAATGATGATAATGAACAAATGGAGACATGTAAAGGGAGAA  
TGGAAAGTCATGGATTTATAGGAGTTCCATTGAGTTGTAAGAACATAATGCAAGCAAAGTTGCTTATGAA  
AATTAGAAGTTATTCTAATCTACAATACAAATTGATGGAGGAATAAATGGAGGGTTTAGGGTTTTGAAAA  
TTGAGGATCCAAGAGCTATTTCTAGCATGGCAAGATAGGTCTATTGTAAGTGCATCTGCATGGCATTGT  
GTATTGTAA

Amino acid sequence:

MGDIVDHEEELSLRLAIVNDSSCCDNHINKKIIKRRRRELMNMFINTWDLNESNCEGKILSLELREMMLKN  
DVKKKGHIINDGKGLH **LIHSLISATSIDENSMLAIENLHELQNVTLFGDSIQRMAAYFADGLIARLLTRKSPFY  
DMIMKPPTQEEFLAFTQFYKVSFPYQFAHFTSNQAILEVFEKELEYNGLLHVIDFFDISYGFQWPSLIQSLSEN  
STTLNRISLKITGYGRITDELRETRLVSFAGKFRNLSFEFQGVLSGYKLSNLTKRKNETLAINLIFHLNSLSTYSKISK  
TLKEVHDLCPISVITVEQEGCKIPKTNFMPRFMDSLHYFAAMFDSLDDCLPIDSIERLSIEKNHLGKEIKNVLYND  
NSSSRYNDDNEQMETCKGRMESHGFIGVPLSCKNIMQAKLLMKIRSYNSSTIQIDGGINGGFRVFEIEDPRAISL  
AWQDRSIVTASAWHCVL-**

SIGRAS50

Solyc12g049320.1.1

Nucleotide sequence (ORF):

ATGACCATTGATGAACTACTTCTGATCCCATCTCAGAGTGGCTGGATAGTCCCTTATCATACTTTCCGTCGTT  
ACTCGATGATGAGTCATATAGCATCGATGATTACTCGATGAGTCATATAGCCTCGATGATATTACGAGGACT  
CATGGTGGGCTCTAATGAGAGCATAAACCAAGAAATACATATCAATAACAATAACGATAATAGTTTACCGTG  
CTTCGATACTAGCTTCCCTGTACAACCGGAGCACTGTCTCTCTGGAGCCGGTCATTTCAAGTCATCTTCCG  
CCATTGGATTCATCAAGAAGAGGAAAGGAATGATTCTGGTTACAATCCAAGGCGTCCCGGAAGAATCA  
GAACCGTAGGATCAATGATGCAGATACAAGAAGAACAACAGGACACAAGAAAGCAACACACAAGTCTAGT  
ACAGGAAATAATGGTAACAACAGAGAAGGAAGATGGGCAGAGCAGTTACTTAACCTTGTGCTGCTGCAAT  
TACAGCAGGAAATCTGAACCGTGTGCAGCACTTGTGTACGTTCTGCGGAGCTCTCCTCACTAAACGGAGA  
TGCCAACCATCGGTTGGCTGCTCGTGGACTCCAGGCGCTGACGTATTATCTTTCTACTCCATGCCCAACTTCA

CTATCTTCTGCTTCTGCTGCTACTTTTGCTTCAACAAATCCGAAGTTCTTCAAGAACTCACTGATCAACTCAA  
TGAGATCAGTCCTGGTTCCGCATACCAATAGCATTCTTCTCATGGTGTCAATGGCCAACATTGCTCGAGG  
AGTTGA

Amino acid sequence:

MTIDETTSDFISEWLDSPSYFPLDDESYSIDDLDESYSLDDIYEDSWWAPNESINQEIHINNNNDNSLPCFD  
TSFPVTTASTVSLEPVISSHLPLDSSKKRKGNDSGYNPKASRKNQRRINDADTRRTTGHHKATHKSSTGNNG  
NNREGRWAEQLLNPCAAAITAGNLNRVQHLLYVLRLESSLNGDANHRLAARGLQALTYLSTPCPTSLSSASAA  
TFASTNPKFFKNSLINFNEISPWFRIPNSIFLMVFNGQHCSRS-

SIGRAS51

Solyc12g099220.1.1

Nucleotide sequence (ORF):

ATGGAAGATGCTTCTGGAAGTCTGGAATCTTTCTGGTTAAGAATCCCTTCTAGTAGCTCTGGAACAAT  
TAGGAGATTCTATACGGGGTTTCTGCTGCGCGCAACATGTATGTTGTTGTTAGCTTCGAAATTGATTC  
AACTAATATGAAAAATCAATCATCTGGCCGTTTACGAGCCAGAAGAAAAACAATAGTATGCAAGA  
ACAAAACGAACAATATTCTGTTAAATTAGATGATTGGGATTCGACGTTGTAGATAAAAACAACACTATTC  
TTTCTATTAAGAAGCAACAGACGATAACAAAAGAGCGAATAATTCATTGATTTCTTCGCTCAACATATTG  
AAAGACTTTGAAATGGATTTAGAAACTTAAAGGGCAAAGATTGATGTTGCTCAAATTAGTAAAAATG  
AATGCACATCAAGTGTGTTGTAATTGTCCGAGAGGAAATTCCTCGATTTGGCGGACAAAAGTTTATGCAA  
CGTATTGAATTTGATCATACTTTGTCGACTCATTGTGTAGTCTTTCGGAGGAAGAGTCTAGAAGTGAAT  
GCTCGTCGAACGACTACTTGCTTCTGCAGAGAAAGTCGGGGAGAAAGTTTATGATATCGCGATTGATCTT  
TTAAATGAATGCGATAAGTTGAGTTACAAAACAGGGCACCTGTTGAGAGATTGGTGTACTATTTCTCTCG  
TGCTCTACGTGAACGAGTTGATATTGAAACGGGGAAGAATTGCACGAAAGGCTTAGGGATACGTAGAAT  
GAGAGATCTTCAGGAGACGTTAAGGAGTATAAACCGGTGCACGATTGCAGTTCAGGACATGCCAATGTG  
TGAAGTCGTGAAATTTGCTGGAATACAAGCTATACTTGAAAATGTAGAGAGCTCGAAAAGATTCATATA  
GTTGATCTCGAGATCAAAATGGGAGTGCAATGGACAATCCTAATGCAAGCACTCGCAACTCAATGCGAGTA  
ACCTTGAATATCTTAAGGTTACTGCATTGATAGATGTTCAATCAAGGACTAACGTCGAGGAGACAGGTAA  
ACGACTAATGAGTTTTGCTAAGTCCTTACACTTTCCGTTATGTTTCAAGATAGTTATGGTGAAGATATCTT  
TGATCTAAAGCGAGAAGACTTAGACATCGATCCTGAGGAATCCCTTGCAGTTTACTCGCAATTTTACTCT  
CTAATATGATAACACATCAAGATAGACTCGATTTCTTGATGGGATTCATCAAAGGTTTGAATCCTCGTATA  
ATGGTTGTTGCAGAAGTCGAGGCAAATCTTAACTCCTGTTTTGTTAACGTTTCAATGAAGCTCTATTC  
TATCACGGTGCTTACTTTGATTTGTTGAGGATTGTATGAGAAACAACGAATCAACTAGGAACGCTATGG  
AGGAAGAAGTAATGTGGCATGGAATAAGGAACATTATCGGAATGAGGGTGAGGAAAGGACAATGAGA  
CATGTAACGATCGAGTTATGGAGAGAGTATTTCAAGCGATTTGGAATGGTGGAGATGAAAATGAGTGAC  
TCGTCGTTGTACCAAGCTAAGACGGTGGTAGAAAAATTTACTGGTAAGAACTCTTTCACGCTCGAGATGA  
ATGAAAATTTTGTACAATTGGATGGAAGGAACTCCTTGAACACTACTATCTGCATGGAAGTTCCACAAA  
AGAAGCACTTTTCATATAGCTAATTACCTCACTCTTTGA

Amino acid sequence:

MEDASGTSEFFLVKESLSSSGTIRRFYTGFCFWRQHVCCCLASKLIQTNMEKSIIWPFYEPEEKTNSMQEQNEQ  
YSVKLDDWDFDVKTTTILSIKEATDDNKRANNSLISSLNILKDFGNGFRKLGKQKIDVAQISENECTSSVCKLS  
AEEILRFGGQKFMQRIFDHTFVDSLCSLSEESRSVM LVERLLASAEKVGKVVYDIAIDLLNECDKLSYKTGHPV

ERLVYFYSRALRERVDIETGKNCTKGLGIRRMRLDQETLRSINACTIAVQDMPMCEVVKFAGIQAILENVESKKI  
HIVDLEIKMGVQWWTILMQALATQCSNLEYLKV TALIDVQSR TNVEETGKRLMSFAKSLHFPLCFKIVMVEDIFDL  
KREDLDIDPEESLAVYSQFLLSNMITHQDRDLFLMGFIKGLNPRIMVVAEVEANLNSPVFVNR FIEALFYHGAYF  
DLFEDCMRNNESTRNAMEEEVMWHGIRNIIANEGEERTMRHV TIELWREYFKRFGMVEMKMSDSSLYQAKT  
VVEKFTGKNSFTLEMNENFVTIGWKG TPLNLSAWKFHKRSTFHIANYLTL-

SILS

Solyc07g066250.1.1

Nucleotide sequence (ORF):

ATGTTAGGATCCTTTGGTTCTTCATCATCTCAATCTCACCCCTCATCATGATGAAGAATCTTCTGATCATCATC  
AACAGCGTAGATTCACCGCTACTGCTACA ACTATCACCACCACCACCATCACTACCTCACCAGCTATTCAA  
TCCGCCAGCTACTCATTAGCTGTGCGGAGTTGATTCGCAGTCCGATTTCTCGGCCGCGAAAAGACTCCTT  
ACTATATTATCAACTAACTCATCTCCTTTTGGTGATTCAACTGAACGGTTAGTCCATCAATTTACTCGCGCA  
CTTTCCCTTCGTCTCAACCGCTATATATCGTCAACCACCAATCATTTTCATGACACCTGTTGAAACA ACTCCA  
CTGATTCTTCTTCGTATCATTAGCTCTAATTCAATCATCATATCTATCTCTAAACCAAGTTACCCCTTTC  
ATAAGGTTTACTCAATTAACCGCTAATCAAGCGATTTTAGAAGCGATTAACGGTAATCATCAAGCAATCCA  
CATCGTTGATTTGCACATTAATCACGGGGTTCAATGGCCACCGTTAATGCAAGCACTAGCTGATCGTTACC  
CTGCTCCCACTCTTGAATCACCGGTA CTGGAAATGACCTTGATACCCTTCGTAGAACAGGTGATCGTTTA  
GCTAAATTTGCTCACTCATTAGGGTTGAGATTTCAATTCATCCTCTTTATATAGCCAATAATAACCACGAT  
CACGATGAAGATCCTTCTATTATTTCTCCATTGTA CTACTCCCTGATGAAACCCTAGCTATCAACTGTGTT  
TCTACCTCCACCGCCTTTTAAAAGACCGCGAAAAGTTAAGGATTTTTTGCATAGGGTTAAGTCAATGAAC  
CCTAAAATTGTTACAATCGCGGAGAAAGGAAGCAAATCATAACCATCCTCTTTTTTACAAAGATTCATCGA  
GGCGTTGGATTATTATACAGCTGTGTTTGATTCACTGGAAGCTACATTGCCACCGGGTAGTCGAGAGAGG  
ATGACAGTTGAACAAGTGTGGTTTGGGAGAGAGATTGTTGATATCGTTGCGATGGAAGGAGATAAAAAG  
AAAGAAAGACATGAAAGGTTTAGATCATGGGAAGTTATGTTGAGGAGTTGTGGATTTAGTAATGTTGCTT  
TAAGCCCTTTGCAATTATCAAGCTAAGCTTCTTTGAGACTTCATTATCCTTCTGAAGGCTATCAACTCG  
GAGTTTCGAGTAATCTTCTTCTTAGGTTGGCAAATCAACCCCTTTCTCCATCTCGTCTTGGCGTTGA

Amino acid sequence:

MLGSFGSSSSQSHPHHDEESSDHHQRRFTATATITTTTTITSPAIQIRQLLISCAELISQSDFSAAKRLTILSTNS  
SPFGDSTERLVHQFTRALSRLNRYSSTTNHFMTVPVETPTDSSSSSLALIQSSYLSLNQVTPFIRFTQLTANQAI  
LEAINGNHQAIHIVDFDINHGVQWPLMQALADRY PAPT LRITGTGNDLDTLRRTGDRLAKFAHSLGLRFQFH  
PLYIANNHHDHEDPSIISIVLLPDETLAINCVFYLRLLKDREKLRIFLHRVKSMNPKIVTIAEKEANHNHPLFLQ  
RFIEALDYTAVFDSLEATLPPGSRERMTVEQVWFGREIVDIVAMEGDKRKRHERFRSWEVMLRSCGFSNVAL  
SPFALSQAKLLLLRLHYPSEGYQLGVSSNSFFLGWQNP LFSISSWR-

SIDELLA

Solyc11g011260.1.1

Nucleotide sequence (ORF):

ATGAAGAGAGATCGAGATCGAGATCGAGAAAGAGAGAAAAGAGCATTCTCTAATGGTGCTGTTTCTTCA  
GGGAAAAGTAAGATTTGGGAAGAAGATGAAGAAGAAAAACCAGATGCTGGAATGGATGAGCTTTTAGC  
TGTTTTGGGTTATAAAGTGAAGTCGTCTGATATGGCGGATGTTGCTCAAAA ACTGAACAGCTTGAGATG

GCTATGGGTACAACGATGGAAGATGGTATTACTCATCTTTCTACTGATACCGTTCATAAAAACCCATCTGA  
TATGGCTGGTTGGGTACAAAGTATGTTATCTTCGATTTTCGACAAACTTTGATATGTGTAATCAGGAAAACG  
ATGTGCTTGTATCTGGTTGTGGTTCTTCTTCTTATAATCGATTTCTCACAAAATCATCGAACAAAGTACCAT  
TTCTGATGATGATTTAAGAGCTATACCTGGTGGTGTCTTTTTCAATTCGGATAGTAATAAAAGACACAGAT  
CAACAACCTTAGTTTTTCAACTACATCCTCATCTATGGTGACAGATTCATCAGCAACGAGACCTGTTGTAC  
TAGTTGATTCACAAGAACTGGGGTTCGTCTTGTTCATACTTTAATGGCGTGTCTGAAGCTGTACAACAA  
GAAAATTTAACTTTAGCGGATCAACTTGTAGACATATTGGTATTCTTGC GGTTTCAACAATCTGGTGTATG  
AGAAAAGTTGCTACTTACTTTGCTGAAGCATTAGCAAGAAGAATCTACAAAATTTATCCACAAGATTCAAT  
GGAATCATCATATACAGATGTTTTACAAATGCATTTCTATGAAACTTGCCTTATCTCAAATTCGCTCATTTT  
ACTGCTAATCAAGCCATTCTGAAGCGTTTACAGGTTGTAACAAAGTTCATGTAATTGATTTAGCTTAAAA  
CAGGGTATGCAATGGCCTGCACCTTATGCAAGCTTTAGCTTTACGCCCCGGTGGACCTCCGGCATTAGACT  
CACCGGAATCGGACCTCCACAGCCGGATAACACAGATGCCTTGCAACAAGTTGGATGGAAGTTAGCTCAG  
TTAGCGGAAACTATTGGGGTTGAATTTGAATTCAGGGGATTTGTTGCTAATTCATTAGCAGATCTTGATGC  
GACTATACTTGATATAAGGCCAAGTGAAACTGAAGCAGTAGCTATAAACTCTGTTTTGAGCTTCATCGAT  
TGTTATCCCGGCCGGGAGCAATTGAAAAAGTGTGAACTCTATTAACAGATTAACCCGAAGATTGTTACT  
CTTGTTGAGCAAGAAGCGAATCATAACGCAGGGGTTTTTATTGATAGATTTAACGAAGCTTGCATTATTA  
CTCAACCATGTTTGATTGTTAGAAAGCTCTGGGTCTTCGTCTTCAGCTTCACCAACTGGGATTCTTCTCA  
ACCTCCGGTGAACAATCAAGATTTGGTGATGTCGGAGGTTATTTAGGGAGACAGATTTGTAACGTGGTG  
GCTTGTGAAGGTTAGATCGAGTTGAACGCATGAAACTGAATCAATGGAGGGTTAGGATGAACTCAT  
CTGGGTTCCATCCGGTTCATCTGGGTTCAAATGCGTTCAAACAAGCTTCCATGCTTTTAGCTCTGTTCCCG  
GCGGCGATGGTTACAGGGTGAAGAAAACGATGGGTGTCTTATGTTGGGGTGGCATAACGGCCACTTA  
TAGCTACCTCCGCCTGGAAGCTATTGCCGGACTCCGGCACCGGCGCCGGAGAAGTCGAGTTGTAA

Amino acid sequence:

MKRDRDRDREREKRAFSNGAVSSGKSKIWEDEEEKPDAGMDELLAVLGYKVKSSDMADVAQKLEQLEMAM  
GTTMEDGITHLSTDTVHKNPSPDMAGWVQSMSSISTNFDMCNQENDVLVSGCGSSSSIIDFSQNHRTSTISD  
DDLRAIPGGAVFNSDSNKRHRSTSSFTSSSMVTDSSATRPVVLVDSQETGVR**LVHTLMACAEAVQENLTL**  
**ADQLVRHIGILAVSQSGAMRKVATYFAEALARRIYKIYPQDSMESSYTDVLQMHFYETCPYLKFAHFTANQAILE**  
**AFTGCNKVHVIDFLSKQGMQWPALMQALALRPGPPAFRLTGIGPPQPDNTDALQQVWKLQLAETIGVE**  
**FEFRGFVANSLADLDATILDIRPSETEAVAINSVELHRLLSRPGAIEKVLNSIKQINPKIVTLVEQANHNAGVFID**  
**RFNEALHYYSTMFDSLESSGSSSSASPTGILPQPPVNNQDLVMSEVYLGRQICNVVACEGSDRVERHETLNQW**  
**RVRMNSSGFDPVHLGSAFQASMLLALFAGGGDYRVEENDGCLMLGWHTRPLIATSAWKLLPDSGTGAGE**  
**VEL-**