

>LOC107412947 (MAPKKK1)

ATGTGCAATAAGGAAATTGCATGCTTAAGCCAGTCTGAAAACAATATTGATCATCAACA  
TCCTCATCAGGCTGTGTACTTGATGGATAGCCCTTCTGCTACAACAACTCGGCCCTA  
ATTATGCTATGTCACCTGGCTCAAATGATGAGTGCCCGCGTGTTAAATTTCTATGTAGTT  
TTCTAGGTAGCATATTGCCTCGCCCACAGGATGGGAAGCTCCGGTATGTGGGCGGAGA  
GACGCGAATCGTGAGTGTGCCTCGGGATATACTTATGAGGAGTTGATGAGCAAGATGC  
GAGAACTATATGAAGGGGCAGCAGTGTGAAAGTATCAGCAACCAGATGAAGATCTTGA  
TGCTCTTGCTCGGTTGTCAATGATGATGATGTGACTAACATGATGGAAGAGTATGACA  
AGTTAGGTTCCGGGGATGGTTTCACCAGGCTCAGAATTTTCTTGTTTTCTCATCCCGAC  
CAAGATGGTTCGTACACTATGATGGGGATGAAAGGGATACTGAGAGGAGATATGTGG  
ATGCCTTGAACAATTTGAATGATGGATCTGATATTAGGAAGCAACAACCTGACTCCCCG  
GTGATTAGTGGCCTTGATGATGGCCATGTAATAGATCAGTTCTTTAACCCATTGAGCCTT  
GAGGGTGGCCTTCATAACCAGAGGAATGAATTGCCCATCCCACAGTATAACTTGCATCA  
CCTCACGATTCCTCATATGGGATCAGGGCAACACCATCAACCAATTAGTCAGAGGTATA  
GTGAATTGGAAGCTCCGTGGAGTCCTGCATACTATTCTCCTAGGCATCATGGGCACCAT  
GATCCTAGAACACTAGCAGAATTTCTTCTTCCCCTTCTGCACGTTATCGTATGCCATTT  
GTAGACTTACCTGATAAATGCTCAGATAGAATGCCAGAAGAATTTTCTCGGCAGCAAGT  
AAGTCCCCGGCCTTCATATGAGCACCAACCTCAATATTCTGATAATGTTGGATGGCTTC  
CAAGTGGAGCCATATCAGGTGAAAAGTCAGGTTTTCCAGGTAACATATTTACACATCC  
AATGTTGTTGAAGGAAGTAGTATCTGCGAGCACTGCAGGATGACTTTCCAAAGAAATC  
AACCACATTTTGAGCATCCCAGTATGGGGAGTGGGCTTCACCAGGTTGCTAATCCGTGT  
CCTGATTGCCACCAAGGGAGACCTTCATGCTCAATGCTGATACAAAGTTGCACCACG  
GAATTCACCCAAATGAACAGAATAATGAGCATCGATCATTATTTAATGACAGCCAAAAT  
CACGAGAGAGGATGGATTCTGCATCAACAATTGAATGCTCGAGCTGATGAAGTAAGAA  
CAAATGTATCTGGGGCTGGGAGATTGAATGACCATTATACTGTTGAAGGTCCTGGTATG  
AATTTGCCTCTTAGTCATGCTAATATGGTAGATGGTCGTCATGTGTCTTCAAATTACGTT  
CACCACCGAGCTGGACCTGAACTAGGAAATGAGGTGTTTTCATGACCAACCTGTGCCTG  
GTGCACCACTTATACATGTCCCTCCTCCTGAAGAAAGTGGTATTCGATATGGGAATCATC  
CTTTTGTCTATGGAGGAGATAATCTTTATCCAGCTCATGGACATGTTCCAGGACATGTTT  
TATGGAGAAATGCTCAGAACCCAATGAATGCCGCTCCATCTTATGAAGCATCCAATGCA  
CCACCTCAAGTCAATGGTAAAGTTAATCCAGTATTCCCAGAGGCACGTGGGAGGGTA  
GTCCAAGATTTTGTATTGGAGTGGATAATCAGAATCCCTGGGTTGAATCCTCACAGAAA  
ATGTTAGGTTTTGATGGGAAAGCGGTCCCAGACTATGCCTACGGCCATGCTTTAAAAGT  
GAACCTCAATATACTTGGTCATGAAAATCAACATCAATTTTCTTCAGACCTTGTAAGAC  
CCTCACAAGAAATCCGAACCTCTGCTAGTCCTTTGGATCCTATTAATGATCTTGTGAGGT  
TGGAGGAGAAAAGTATACCTAAAGAAAAAATAGAGGAAAATCATTTAGAGAAAACCTG  
ATAACTCTGGTGTGCTGGCTATTTGTTGTTCTGGTCAAGCCAAAATTGGTGATAATAATT  
GTGAGCTGGCATCTCTTGAGTCCATTAACTCAAATTGCTTGAAAACCACAAAAGAGAG  
TGGTGATGACATCAAACCAGATGGAAAGGATCTTTCTGCTTCTCCTGATGTTTCAAAGC  
TTTCGGTTAGCAGGTTGAGTTTCTTACCTGATTTGATTGCTTCTGCAAAAAAGGCTGCA  
TTAGAAGGGGCTGAGGAAGTGAAAGCTGAAGCTAAAGAGGATGCAGACAATAAGAAG  
AATGTCTCGACAGCCAAAGAAACAGCTGCTAAAGAATTAGAATCAGCGAATGTTCCCTG  
GGGATTCAGAATTTGGATTCGGATTGTGATAATCTAGACACTTCCAAAATTGAGCCAACA  
AAGGCTGAGGCAGAAGCTATTGCCAAGGGATTGCAGACAATAAAGAATGATGATCTGG

AGGAGATTTCGAGAACTAGGTTCTGGAACATATGGGTCTGTTTATCATGGGAAGTGGAA  
GGTTCCTGATGTAGCAATAAAGAGAATAAAAGCTAGCTGCTTTGCTGGGAGACCATCA  
GAAAGAGAACGACTGATTGCAGACTTCTGGAAGGAGGCTTTGATACTAAGCTCACTAC  
ATCATCCGAATGTCGTCCTTTTATGGTATTGTACGTGATGGTCCTGATGGATCTTTAGC  
AACTGTAACAGAGTTCATGATCAATGGATCTCTGAAGCAGTTTTTGCAGAAAAAGGAC  
AGAACAATTGACCGTCGGAAGAGACTCATCATAGCTATGGATGCTGCAATTGGGATGG  
AGTATTTGCATGGGAAGAACATTGTACATTTTATTGAAATGTGAAAATCTGTTGGTA  
AATATGAGAGATCCACAGCGGCCTGTGTGCAAGATTGGAGATTTGGGCTTGTCAAAGG  
TAAAACAACATACTTTAGTGTCAGGAGGTGTTTCGTGGAACCTTGCCCTGGATGGCACC  
TGAGCTTCTTAGTGGGAAAAGTAACATGGTTACGGAGAAGATTGATGTTTACTCATTG  
GGATTGTTATGTGGGAATTACTCACTGGAGATGAACCTTATGCAGACATGCATTGTGCT  
TCTATAATTGGAGGAATTGTGAACAACACATTACGTCCCCAAATTCCTACGTGGTGTGA  
TCCCTGAGTGGAAAGTCTTTGATGGAAAGTTGTTGGGCCTCTGATCCAGCAACTAGGCCA  
TCGTTTTCTGAAATCTCTCAGAAGCTGAGGAATATGGCTGCTGCAATGAATGTGAAATG  
A

**>LOC101223021(MAPKKK2)**

ATGGAAGCTGGGAGTAGATTTTACTCTGCTACAGATGAGTTCAGATTGGAAGCCAAAG  
GTTGGTTGATCCCAAACATCTATTTGTTGGACCTAGAATTGGAGAGGGAGCCCATGCCA  
AAGTTTACGAGGGCAAATATAAGAACCAGACTGTTGCTATCAAATTTGTTCAATAAGGG  
GAAACAGTTGATGAGGTTGCAAAGAAAGAGGCTCGGTTTGCTCGTGAGGTTGCAATG  
TTGTCCAGAGTACAACATAAAAATCTTGTCAAGTTTATTGGTGCCTGCAAGGAGCCTGT  
AATGGTGATAGTAACCGAACTTTTATTAGGAGGGACCTTACGAAAGTACCTGCTCAACA  
TGCGCCCACGGTGCTTGGACACACGTGTGGCAGTTGGTTTTGCACTTGATATTGCTCGT  
GCTATGGAATGCCTTCACTCACATGGCATCATAACCGTGATTTGAAGCCTGAGAACCT  
TCTGTTGACAGCAGACCACAAAACAGTTAAATTAGCTGATTTTGGTTTGGCAAGAGAA  
GAGTCGTTGACGGAGATGATGACTGCAGAGACAGGAACCTACCGTTGGATGGCTCCA  
GAGTTGTACAGCACTGTTACCCTAAGGCAAGGGGAGAAGAAACACTACAACCATAAA  
GTGGATGCCTATAGCTTTGCTATTGTGTTATGGGAACTGCTGCACAACAAGTTGCCATTT  
GAAGGCATGTCAAATCTTCAAGCAGCATATGCAGCTGCTTTTAAGAATGTAAGGCCTAG  
CGCAGAGAATCTTCCCAGGAACTGGCTATCATTCTAACATCATGCTGGCAAGAGGATG  
CAAATGCTCGTCCAAATTTCTCCCAAATTATCCAAATGTTACTTAATTACCTTTATACTAT  
TTCACCCCCTGAACCGGTGATTCTTCCCGAATTTCACTTCTGAGAACACGGTTTTTC  
CTCCTGAATCTCCTGGAACAAGCTCGCTGATGGCAGTCCGTGACGATTCAGGGGACAC  
TCCCAAAGCTAAAATGGAAAATAATCCCAGAGGTTGTTTCTTCTGCTCCAATGACTGTT  
ACTAA

**>LOC107413171(MAPKKK3)**

ATGGAGATGAGAACGACGCCGTTGCGTTTCGCACTGGGGAAGCAGTCGTCTCTGGCAC  
CGGCCCGGGGCTCGGACCGCCGCAACAAGCCGGAGGTGGACTCCGGCGGGGAGGTG  
AATCCCGGGGTGCGGCTGATGTACTTGGCCAACGAAGCTGACCTTGACGGCATAACGCG  
AGCTCTTGGATTCCGGCATCGACGTCAATTTCCGCGACATCGATAATCGGACGGCTCTG  
CATATCGCTGCGTGCCAGGGCTTGACCGACGTGCTTGCCTGCTGCTGCAGCGTGGTG  
CTGAGGTTGATCCTAAGGACCGCTGGGGAAGCACTCCTCTTGCAGATGCTATATACTAT  
AAAAACCAAGACGTGATCAAGCTTTTGGAGAAACATGGCGCTAAGCATGTGCCGGCG  
CCTATGCACGTCAGACATGCCCGTGAAGTCCCGAATATGAAATTGATCCAAAAGAAGT

TGATTTACCAACAGCGTTGAAATTGATAAGGGGACCTTCCGCATAGCATCATGGCGTG  
GAACAGAAGTTGCTGTCAAAAAGCTAGGGGATGAAGTGCTTGTTGATGAGGATAAAGT  
GAAGGCATTTAGAGATGAACTTGCATTGCTTCAGAAGATACGGCATCCAAATGTAGTCC  
AATTTCTTGGTGCTGTGACTCAAAGTAGTCCAATGATGATTGTGACTGAATATTTGCC  
AAGGGTGATCTTCGTGTATTCTTGAAAAGAAAAGGGGCTTTAAAACCAACAACCTGCTG  
TCAGATTTGCACTTGATATTGCAAGGGGAATGAGTTATTTGCATGAGAATAAGCCGGTT  
CCAATAATTCACCGTGATCTCGAGCCTCCAAATATATTGCGGGACGATTCTGGGCACC  
TAAAAGTTGCAGACTTTGGAGTTAGCAAGTTGTTGACGGTTAAAGAAGATAAGCCTCT  
GAATTGTCTAGAACTTCTTGCCGATATGTTGCCCGGAGGTTTTTAAACATGAAGAAT  
ATGACACAAAAGTGGATGTATTCTCATTGCTTTGATTCTGCAAGAGATGATTGAAGGC  
TATCCACCCTTTTGTACTAAGCAAGAACTGAAGTTCCTAAAGCATAACGCTGCAAGAGA  
TCGCCACCTTTTAGAGCTCCAGCTAAGCGCTATACGCATGGGCTAAGAGATTTGATTG  
AGGAGTGCTGGAATGAGAACCAGCCAAGAGACCAACATTTAGGCAGATAATAACA  
AAGCTGGAGATCATCCACAACAGTCTCAGTCATAAGAGGCGTTGGAAGGTTAGACCAT  
TGAAATGCTTTCAAATATAGAAGCTATGTTGAGGAAAGATCGTTCCAATCCAAGCAGC  
CGCAGTGGCTCATCTCGATCTTCTCGCAGCAGCATATAG

**>LOC107414729(MAPKKK4)**

ATGGCGGGTTCATGCTTTCATGCACTTCGTCTTAGAAGGTGCAAGAGCAAGCCTTTGCC  
AGTCCCTTCCACTTCGAAAACCAAGCTGAATTCTGACATGGACAATTTAGAGAGGAAA  
AGGTTTGATAGCTTGGAATCTTGGTCTATGATATTGGACTCTGAAAATGTGGAACTTG  
GGAACCATCGAAGGAGGATCAGGAGGAGTGGACCGCTGATCTTTCGCAGCTTTTTATT  
GGCAACAAATTCGCTTCAGGAGCACATAGTAGGATTTACCGTGGAATTTACAAGCAGC  
GAGCTGTTGCTGTGAAAATGGTAAGGATTCCAAACCAGAATGAGGAGACCAGATCCTT  
ACTTGAACAGCAATTCAGTCTGAAGTTGCTCTGCTTTCGCGACTCTTTCATCCAAATA  
TAGTGCAGTTTATCGCAGCTTGTAGAAAGCCTCCTGTCTACTGTATCATCACAGAATA  
TGCTCAAGGAACGCTGAGGATGTATCTAAACAAGAAGGAGCCATACTCACTTTCAAC  
AGAAACAATACTCAGGTTAGCTCTTGACATATCCCAGGAATGGAGTACCTTCATTTCG  
AAGGGGTTATCCACAGGGACCTCAAATCCAATAACTTGCTTCTAATGATGAAATGAGG  
GTTAAGGTAGCAGATTTTGGTACGTCTGTCTTGAACACAATGCCAGGAGACCAAGG  
GAAACAAGGGAACCTTATCGTTGGATGGCACCGGAGATGATCAAGGAGAAAACCTTATAC  
TAGGAAAGTTGATGTTTATAGCTTTGGGATTGTGCTATGGGAGCTCACAACCGCTTTGC  
TTCCCTTCCAAGGAATGACCCAGTGCAGGCTGCATTTGCTGTGGCTGAGAAGAACGA  
GCGGCCTCCAGTGCCAGCTAGTTGCCAGCCTGCACTCGCACACTTGATGAAGCGATGC  
TGGGCAGCAAACCCTCGAAGCGGCCTGATTCAGTGACATTGTGTCCACTTTGGAGA  
AGTATGATGAGTGTGTGAAGGAGGGTCTTCCCTTCCCTCACCCTCAGGGCTGGTCAG  
CCGGAATGTTATTCAACGCTTGAAAGGCTGTGTATCTATGAGCTCCTCCATACTTGTACA  
TGCCTGA

**>LOC107422643 (MAPKKK5)**

ATGACGATCATGGGAGACACAGAGAGTTGCGGTAGCAGAGCCGTTGATTTCTCGCCGA  
CTCTGAGCCGAAAGCATAAACAGAAAGGTTGATATCTACGACGAAGTTCTTCATCGACT  
CAGGGACTTGAATGTGGCAGAGTCATGGCTTCTGGTTTCGAAGATGAGCTCTGGGCT  
CATTTTTGTGCCTTCTACTAGATATGCATTGGACGTGAATGTGGAAACCGCACAGA  
TGTTCTTATGCATAAAAGATTACTGCATATGGCACGTAATCCTGTTACTAGACCTGCAGT  
TGAAGTCCGTCTTGTGCAGGTTTCGTTCTGTTGTGCCTCAAACCTCATATGGAAAAGTGG

AAGCACAGTGTCTGAGCATGTCATCAAACAGAGTATTCATCCACCACCAGCCTTTGGT  
TTATCACCTGACCTCGAATTTGATGCAAACAACTCTATATTCAGAGTCCGATGGC  
ATGAATCCAAGCATCTATATTACGGGCCAATGCATGAGATTACAATTTCAACAAGTGAC  
AAGCCAAAACCTTCTCTGTCAGTTGACATCGTTATTGTCTGAGATTGGGCTGAACATTCA  
AGAAGCCCATGCTTTTTCCACAATAGATGGCTACTCTTTGGATGTTTTTGTGTTGATGG  
TTGGGCACTTGAGGAGACTGAGCAGCTTAGAGAACTCTGGCAAAAGAAATACCAAG  
GATTGAGAAGCATTCGAGGTTAAATTATCAGGCTATTTCCCCTGTTGGAGAGCAAGAAC  
ATGGAGTGCAGTTTATTCATAATCATTAAACATAACCACCTGATGAAAATGATCTCTGGG  
AAATTGATGCAAGCTTGTGAAATATGAAAAGAGAATAGCATCTGGTTCGTCTGGCGAT  
TTGTATAAAGGCACTTTCTGTAATCAAGATGTGGCTATTAAGTTCTAAAGGCTGGGCA  
CCTGAATGAAACAATGCAGAGGGAATTTGCTCAAGAAGTCTATATCATGAGGAAGGTT  
CGGCATAAGAATGTTGTCCAATTCATTGGGGCGTGTACCAGACATCCAAACCTATGCAT  
TGTTACTGAATATATGGCTGGTGAAGCATGTATGACTTTCTCAAAGAAAACAGTGTCT  
TACCTCTTCAGTCCTTGCTCAGAGTAGCAATTGATGTTTCCAAGGGCATGAACTATTTG  
CACCAAAGTAACATAATCCATAGAGACCTGAAAGCTGCTAATCTTTTAATGGATGAAA  
TGGAGTTGTTAAGGTTTCTGATTTTGGTGTTGCTAGAGTGCGAGCTCAATCTGGCGTGA  
TGAATGCAGAACTGGAACCTATCGTTGGATGGCTCCAGAGGTTATTGAACACAAACC  
ATATGATCACAAGCTGATGTCTTTAGCTTTGGGGTTGTGCTGTGGGAGCTGCTTGCCG  
GAAAGCTTCCTTATGAGAACTTAACCCCGCTACAAGCAGCTGTCGGCGTGGTCCAGAA  
GGCCTGAGGCCTAAAATCCAAGGCATGCTCATCCGATTTTGGTTGAACTGTTGGAG  
CGGTGCTGGCTACAAGACCCATCATTAAAGACCTGAATTCTCGGAAATTGTAGGAATTTT  
ACAGAACATGGCCAAGAAGACGGAGGAGAGGGCTGGCAGAAAGGAAAAGCAATCAA  
GGATAATACCAGTTAGTATGCAGGGAAGAAGCCCAAGTGGCATAGTTTATCGCAAATTT  
TAG

**>LOC107423632(MAPKKK6)**

ATGAGAAATATGCCATGGTGGGGGAAGTCGTCGTCGAGAGAAGCAAAGAAGAAGACA  
AGCAAGGAAAGTCTAATCGGTACATGGCACCGAAAATTGAGGACTTCATCTGATAG  
TAAAGTGAGCTGTGGATCAGGAGGGGCTCGAAAACAATGCAGTGACACAGTTTCAGA  
AAAGGGGTCTCGCTCCCCTCAAGAATCTAGATCTCCTTCTCCTTCTAAACAAGTGGCAA  
GGTGTCAAAGTTTTGCTGATAGGCCTTCTCATGCTCAACCACTTCCACTCCCTGCAACC  
GTGGGTCGTACAGATTCTGGAATTAGCATATCAACAAAGCCAAGATGCGAAAAGGGCT  
CCAAGCCATCAATTTTTATGCCTCTCCAAGGCCTGTATGCATCCAAAGCAGATCAAAT  
CCTAATGATTTAGATCTAGATTTGGTTACAGCTTCACTGTCTAGCGAGAGTTCTGTGGAT  
AGTGATGATGCAACTGACTCACGCCATCGTAGTCCACAAGCCACTGACTATGAAAATG  
GGACTAGAACTGCCATGGGGAGTCCTTGCAGCTTGATGCCCAAGGATCAATCCTCAA  
TGCCATCCAATAAACTCTAGAGATTCTAAAACTCAGCTAACCCCTTCTTTCAACAATC  
GAATTTCTCTACATCTCCTAAACAGAGGCCCTTGAGCAGTCACGTGCCAAACCTACA  
GGTTCCTTATCATGGTGCATTCTGCAGTGCTCCAGACAGCTCCATGTCAAGTCCTTCCA  
GAAGTCCAATGAGAGTATTTGGCGCTGAGCAGGTGATGAACACTGCTTTTTGGGCTGC  
GAAGCCTTACCCCGACATCACTTTACATGGATCTGGCCACTGCTCAAGTCCTGGTTTCA  
GTCAAATTTCTGGGCATAATTTCTATGGGAGGGGATATCTCTGCACAGTTCTTTTGGCAA  
CAAAGCAGGGGTAGCCCTGAGTACTCTCCAGCACCTAGTCCCAGAATGACTAGCCCTG  
GCCAGGTTCCAGAATTCAAAGTGGTGCTGTACACCTATCCATCCTAGATCAGTTGGA  
ACACCATCTGAGTCACAGACAAGTTGGCCTGATGATGGGAAGCAACAGAGTCACCGTT

TGCCTCTTCCCTCCAGTGGCGGTTTCTAATTCTTCTCCTTTTGGCTCATTCCAATTCTGCAG  
CAACTTCTCCTTCTGTGCCGCGAAGCCCTGGAAGAGCAGAGAATCCAGCAAGTCCTGG  
ATCACGCTGGAAAAAGGGAAAGCTATTGGGCAGAGGGACATTTGGACACGTTTACGTT  
GGTTTTAACAGTGAGAATGGAGAAATGTGTGCAATGAAGGAGGTTACTTTATTTTCAGA  
TGATGCAAATCTAAGGAAAGTGCTAAGCAATTAATGCAGGAAATTGCTCTGCTCAGC  
CGTTTGGCGCATCCAAACATTGTGCAGTATTATGGGTCTGAAACAGTGGGGGACAAAA  
TTTATATATACCTGGAGTATGTATCTGGTGGGTCAATCTATAAACTTCTTCAAGACTATGG  
ACAGTTTGGCGAGCTAGCAATTCGTAGTTATACTCAACAAATCTTGTCAAGCCTTGCAT  
ATTTACATGCTAAAAACACTGTTTACAGGGATATCAAAGGAGCAAATATACTTGTGGAC  
CCAAATGGCCGTGTTAAATTGGCAGACTTTGGGATGGCAAAGCATATCAGTGGGCAGT  
CATGTCCTTTGTCAATCAAGGGAAGCCATACTGGATGGCGCCTGAGGTTATAAAGAAC  
TCAAATGGTTGCAACCTTGCTGTGGATATCTGGAGTCTTGGCTGCACTGTTTTGGAGAT  
GGCTACAACAAAACCACCCTGGAGCCAGTATGAAGGGATTGCTGCCATGTTAAGATT  
GGGAATAGCAAGGAGCAACCAGCGATTCCAGATCATCTCTCAGCCGATGGAAAGGATT  
TTGTAATCCAATGCTTACAACGAAATCCACTTGATCGTCCACAGCTGCTAAACTTTTG  
GATCACCTTTTGTGAAATATGCTGCACCTCTGGAAAAACCTGTTTCGGGCCAGAGCT  
GTCAGATGCCTCCCCTGGTGTATTATAATGGAGTGAAAGCTCTGGGAATTGGGCAAGCTA  
GAAATTTCTCAACCTTGGATTCAGATAGACTTGCAGTTCATTCTCGAGAGTGTTGAAA  
ACTAATCCCACGCCAGTGATATCCATATCCGAGGAACATATCATGCCCTGTCTCACCA  
ATTGGAAGCCCTCTATTGCACTCAAGGTCTCCAAAATACCTAAATGGAAGAATGTCCC  
TTCTCCTATCTTAGTCCACGAACCACTTCCGGTTCATCCTCTCCTCTGACAGGTGGCA  
GTGGTGCAATTCCTTTTAATCACCTTCAACAGCCAGCATACTTGCAAGAGAGTTATGGA  
AGCGTACCAAAGCCCTCAAATGGTTTTTATATTAATGGTTTTCTCTCATCACGATTCAAGT  
CATGACATCTTCCAAGGGATGCAACCAGGATCTCAAGTGTTCTCTGAACTGGCACCCA  
GCGAGAATGATGTCCTAGGAAAGCATTTTGCAAGACCTGCCCATGGAGAACGGTATGA  
TGGACAATCAGTTTTGGCTGATTGTGTGTCTCGGCAACTCTTGAGGGAAAATGTCAA  
CTAAAACCATCTCCGGACTTGAGCCCCACTTCTCATTGCCCAGCCATACAAACTGTTT  
CTAA

**>LOC107427772 (MAPKKK7)**

ATGGCGTTTGATCAAATCTATTCCAAAAGATCTAAGACCGTTAAACGTAGCTCGAAC  
TGTGGCCGAAGAACCCCGCATTACGCCAGCTACTACAACGGGTCGAAGCCCAGATGGT  
TTTTTCCCAGCTCAGCTCGTGAGATTGGAAGCCCTGATTCTGTACCTGTTTTTTATCCG  
GCAGCAGTTTCGGAAGCTGGGTTTGTGGTCTCGGATATGGAAATGCGGCTCCGGGTG  
TGGCTGCTTGGTGTCTCTTGTGCCTGCAGCAGTGGGGCATCAAGGTGTGAGCTCGGC  
TGTTGGATATGGTTATAGTCCTAATTTGGGCACTCGAGTTGCTGGTGCTGCTGTAGACCT  
TATAAACAGTGGTCCCTCCTATGGTGTCTGGATCCAATCCGAATTTGGGCAATCGGATTGT  
GCCGGTGGTGCAGATCATGCTAGTCATGATATGGGAGCCAAGCATGTCTATGGTAATAG  
AGTTGGCGTTGTTGCTGCTGATCAGACAGGGAATGATTCGGCTACTAGCTCTGGTTATA  
GTCCTAATTTGGGCGGTGCAACTGGTGGCAGTGGGACCGATCAAGCAAGTGAAGAGG  
GTGGAGATGATTCTGTGTCAGGGAAGAAAGTAAAATTTTATGTAGTTTTGGTGAAAA  
GATTTACCCAGACCTAGTGACGGGATGTTGAGATATGTTGGAGGGCATAAAGGATTA  
TTAGTGTTAGAAGAGATGTGAGCTTCAATGAGCTTGTGCAGAAGATGGTGGATACCTAT  
GGGCAACCAGTGGTTATAAATATCAGCTACCTGATGAGGACCTTGTATGCACTGGTGTG  
TGTTTCATGCCCCGATGATCTTGACAATATGATGGATGAGTATGAAAAGCTTCTTGAAA

GGTCTTCAGATGGGTTCGGCTAAATTAAGGGTGTCTGTTTTCTGCTTCAGAACTAGAT  
CCATCTGGTGTGGTGCAGTTTGGGGATTTGCACGATAGTGGGCAGCGATATGTTGATGC  
AGTGAATGGTATTATGGATGTGGTTGGTGGCAATATCACAAGGAAGGAGAGTATAGCAA  
GTGCAACTTCAACGCAAAATTCTGATTTTCAGTGGAACTGAGGTTGTTGATAGCTTGGGT  
CCTGGCCAAGGGGATGTTACTGGACCTCTATCAAACAGCAATTTGTCGCCCAAGGGAA  
ATTCAGATACTTCGCATGATACTGCTTCAAAGTTGGTGTGTTGTGGATCCCAGTCATGCA  
GTTTATGCTGATGCTTCTGCAGTACCATTTGGCATTCTGTGGTTAAGTCTGGACCTCCC  
CAAACCTCTGACTTCTCGGCCAGAGGTTGAACTAGAAAGGTCTGTGCCTGCAACATTAC  
CACAGCAGCAACTGGGTCTGCAGCAACCTGGAATGGAAATCCACCTCCAACATCCTA  
TGCCAATCATATGTTGATCCTCGCCAAGAAGTTGTGAACCATGGAGATTATATTCATCT  
CTCTCCTCAAATGGGGTTTCCAAGTCCTCATCTGTTGGGTACAGCAGGCCCCCGTATTTA  
CCCAACAGCAGTTCGGTGATACTGGTGTGTCATGACGCCACATCATTTTATTCTGCA  
GTGCACATGACATTGAATCCCTCATCTTCTTGTGTTGGTATAAGACCAAATATGGTTCAA  
CCTTTGGTGAACCCAGCAAACTCAGTTGGATAGTTTTGTGGATGAAAGAACATTTG  
GTCCAAGGGTTGTCCAGCTTCTGTTGAACAAAGCTACAATTCTTATCAGGTTCCAGGTC  
CCATCAGCAGTGGTAGGAGGTGGTTATAGCTGGCATCAGGTTCCACCGCAGGAGCATG  
TAATTTTCTCTGATGGATCAGTACCCACCAGCAGGTAATATACCCTGAGAAAATCACA  
AGGTTGGAGGATTGTTACATGTGTCAGAAAGCATTGCCTCATGCACATTCTGATACTGT  
GGTACAGGGCCAAAAGGGCAGTCCTTCAAGTTCTGTATCTGATTCAATCTCAACTTATC  
ATAGTCTTCGTTTGGATGACAATCTGAGAACTCAGCCCGTACTAGGGTTATGGCGACT  
GGAGCATTAGGGGAAGGCACTCTTGAACAGGGAATTGAGGCTTGGCCTAAGGTCCTTG  
GTCATGGGGATCCTCAAACCTGGAAACATTCAACCAGAGGCAACTAGGCTTCCACAGAT  
TCTTGAGGGAAATCATGAAAATGAAAGGATTAACCTGCAACAAGTTGATAATATTGATC  
ATCCTAGAATTCCTGTTCCACAGGGTGTGATTGGGAGGGTTGCTGATCTGCAAGCATCT  
AACGGTGCATTTTTGGGCACTATTCTCAATCTTCTCAAACCTGATTCTGTGCAGCAATG  
GTCTGCTTCGGCTCAGTGCCAGGTTAAACAAGATACATTGGTGAATAAAATTGTTACTC  
GGGACATGCCTCCTGTTGGAGGTGTGCCTGTTCAAACCTCAGAGTGCATGGTTCATGA  
ATCTCCGAAGGAGTATTCTAGCAAACCTTCCAGGTGTCATTCCAAAAGAAGATTCTGTAG  
ACACTTGCATGTCATATGAGCAACTGAGACCAATTGATGCGAGGATGGAAACCCTCAG  
GATATCCCCCAGTGAAACGTATGTCAATAAGGAGCATGGTAAGCTACCTGTTGATAAAT  
TTAGGATGGAAGAGAGCTCTGATCATAGAATACAGCAAGTTGGAGGGAGGGATGTGCT  
TCTTGATAAGACCTTTGACAAATTCGAGACTTCTAACTTTATTCCAGCTGAAATGCTCC  
CCTCTCCTCCGCAGAATCTCCATATATGCATAATTCAAGGCTCATAGAATCCTATGAGG  
TGGCACAACCTCCTATGTGGGGTAATCCTGGATCTTATGCACACTCAAACCTAGGAGTG  
CATCAAATGAATCCAAATGAAGTTCATTATGGCAATCCTGCATTTGCTGGAATTGACTCT  
GCTCATTTAACTGATAGGGTAAGACCTTCTGCTGAATGGATGGATGACACACTAAGATT  
GCAGTCTAAAGTAGGGCAAACAATGCTGAAGCTCTTCTCTCAAATGTTTCAGGATTC  
TCAAACCTCACTCTTTAGCAATCAAGATCCCTGGAATTTGCACCATGACACCCAGTTTCC  
ACCTCCAAGACCTAATAGGGTTCCCTCAAGAAAAGAACTCTTTTCTCCTAAAGATCCTG  
TAAGTGAGAACCATTTGGGCAATAGTGGGGAACATAACACAATGGAGGATGGAGTTCA  
ACAGCCATTTGGCAATATGAACAGGGATGTCAATTCAGAGCATGCTCGATCTGCCAAA  
GGCTCAGCAGAGGAACAGATCAAGCAAGAACTTCAAGCTGTTGCTGAGGGCGTAGCT  
GCTTCTGTTTTTCAGCCATCTACATCTGTAATCCTGACTTGC GCGATAAAAACGAATCC  
GGTAACGGTTCTAAGCAAGATGGAGATGTTGAAAACAGTGATGCTGCCGTACAGCACA

ACGAACAGCATAAAGATGAGGATGTAAAACTAAGATGCCAGAAAAAGCAAATGTCG  
GTTTCCCAGTATCAGATGGCATTGGCCGCTTGCAGATTATAATGAACAGTGACCTTGAA  
GAGTTGAGAGAATTGGGTTCTGGCACCTTTGGCACTGTTTATCATGGAAAATGGAGGG  
GTACTGATGTAGCAATCAAACGGATCAATGATAGGTGCTTTTCTGGAAAAGCTTCAGAA  
CAAGAGCGCATGAGAGATGATTTCTGGAATGAGGCCATTAAGCTTGCTGACTTGCACC  
ATCCAAATGTGGTAGCTTTCTACGGTGTGTGCTTGATGGTCCTGGAGGTTCTGTGGCT  
ACAGTTACCGAGTATATGGTCAATGGTCTCTAAGAAATGCTTTGCAGAAGAATGAGAA  
GAGTCTTGACAAGCGTAAGCGTCTTTAATTGCAATGGATGTGGCATTGGAATGGAGT  
ACCTGCATGGAAAAGAATATAGTTCACTTTGATTTAAAAAGTGACAACTTGCTTGAAAT  
CTGCGAGATCCTCACCGTCCTATATGCAAGGTCGGTGATTTGGGACTATCAAAGTGAA  
ATGTCAGACATTGATATCTGGTGGTGTGCGAGGAACACTTCCATGGATGGCACCGGAG  
CTTCTGAATGGTAGCAGCAGCCTTGTCTCTGAGAAGGTTGATGTATTTTCATTTGGCATT  
GTGTTATGGGAGCTCCTTACTGGGGAAGAACCGTATGCAGATTTGCATTATGGGGCCAT  
CATAGGTGGCATTGTAAGCAACACCTTACGGCCAGCCATTCCCGAATCTTGTGATTTAG  
AATGGAAATCACTAATGGAGAGCTGCTGGTCATCAGAGCCATCCGAGAGACCAAGCT  
TCACCGAAATTGCAAACCATTTACGAGCTATGGCAGCAAAGATCCCTCCCAAAGGTCA  
AAACCAACCTCAGCAACCCTCCTCAACACAGCCTCCTGTTCAAAAATGA

**>LOC107429777 (MAPKKK8)**

ATGATGGCAACTTCGCAATTTCAAGAACTCCAAGTGCAAAATTTGAAGACCACCCAG  
TCACAGACTCCACAAAACCTATAAACTCTCTCTCATCGCAACGAACACTCGCACCA  
AATTTCCCTCTCTGGTCTCTCTCTACGAAACCTCCATGAAAGAACCTCCTCTTACC  
ATCATCACCATCTCTCTCGTCGCAAGAGACCCACCAATAATAAACCAGCTCAAGAAA  
CTCAAGCTCGTATGCAGCTTCAATGGCTGTTTCCAAACCCGTCCACCTTCAGCCAAGCT  
CCGCTACGTCGGCGGCGAGACTCGTATCATCTCCGTCGACCGGAATATCAGCTTCTTGA  
AGCTCCGATCAAAGATTGCGGATCTATGCCCCAAAACCACCTCCTTCGTCTCAAATAC  
CAGCTTCCCGAATCGGACCCTGCCTGTTTCGACTCCGGTACTCCTCTGGTCTGATCGC  
CTCCGACGACGACGTTCTGCTGCATGATAGACGAGTACGATAAACTCGAGCTTTACTGTA  
AGAATGCCAGGCTCTGGGTTTACGTGTGTAGCAATAATGGCGGTGATAATGCGATGGTG  
ATGAATCAATTGTATGGGAATTGTACGGGAATTAAGGGTTTGAATGGGCTAGAATATGA  
AACTGCAATTGGTGGTGGCGGTGGTGGTGTAAATAATGGGTTTGAAGTCTCACTCTCAA  
AATGTGAGAACCAGGTGTTTGGAGCTCAGGTTGATGGTAAGGTTGTTAACAATTTAGG  
TGAGTACGGTGTGATTGTGGTGTGATTGCTCAGAACAATTCTGCTGAAACAGCGA  
ATGGTGGCAAAACAATCGGCTCAAATTCATAGCAGTCAAGGTGTTGGGGTTTTGCTTC  
TGCTGAGAATGAAGCCGGAACGTATGCTGCGGTGAAAATCGAAAGTTTGTACCCCA  
CTGATAGATTTAGGACCTCAACAACCCCAAGTCTCAATTAGCAGAGACGAGGTGATTC  
AGAGTTTTGAGGACCTCGACGTGTAGATAGCAAACAGCAGGTACGCATGTGCCTAG  
AAGTGAGAATTGGGTTTCAAGTTCCAGCGCCCCGTCCATTCCCTTGAATCCCATGGATG  
GGAATCTGCGTGTGGAACCAAATAGTTTCGACGCAATGTTTGGCGGTGAACTGTGGCAG  
CGTTTTCTGTAATGGGTGTTGGATTCCCAGTGGGTCGCTTTCAGCACTGCAAGGTTTCGT  
CAAACCTGAAGCAACTGGGAAGTTATGGTGAAGGTTTGTGTGGCTTTGGTGCTAA  
GCAGGATTGGAGAAACACTGGACCTGTGCAGATGAGCAATTTCAACAGGGAGAACAT  
TATGCCTTGGGGAGCAGTTTCAAGTTCCTTGTGTTGATCATTGACTGGAGTTGCTTATCC  
CCAGAATCTATGTACAACGGCAACAGGGTTTTGTGATGGCTTTCGGAGCAGTATAAGA  
AATCATAGTTTTGGAGTAAACGATTCTAGAAATCAGCGTCTCTGTTCCATACCATGCTCA

GGATCTTCGAAACATGGCTGAAATGGGTAACCATCGAGCTGCTGCAAGATTGGATGGA  
AGGAATTCAATGGGAAAAAGCTACTATGTGCTCAGACCAAATACGAGCATAGCAAAAC  
AGGGGCAGTCTATGAGAGTATTTTATCCCCACTCGTGGAGGCAGAGGTCTGTTTTTCCA  
GAGCAGCAAGTGTTAAATGGACGGGCTAATATGAAGGATTATAGCATGAATAAGAAAG  
AGACTCTGTTGTATGACGTTTCAGTATAGCAATGATAAACTACGGGATCAGAGAGGCCCT  
GCAGTTTCACCGAGCAGAAATTCAAAGGTTGAGGAATCTTATTTAGCTTATGCCGGAGC  
ATGCAGCAGATTGAACAGCCAAATTCTCTCATCTCGTGATGCGATTGAGAGTTCGAATC  
CTTGATGACGACAATGAAGACTCGGGCTGATCTCTTATCTGGTTCTAATTGTGAGAAG  
TATGAAATTTCTTCTCAGACTTTGGATGATAATTTCCGGTGAAATACCCACAAGTTTTGAT  
CCTATCCATTGTTATGAGGTTGCAAACGTCTCTGGTTTTTCTAATGGTCTGATTCATAGC  
AATGGAACAGAATTGGGATATAATAAGAAATTTCTAGGTGATGTAGTAGCCGTAGATTC  
TCTTAGCAACCATAGAAATGACTCTAAAGATGTACAAGTACACAAGGAAGAAATTGCA  
TCTTCGGTTAATAGCTTTCTGGGTAACCCCTCACCATCGTCATCCAAAGAAGTTAAGCC  
TCCTGCATTCTCACCTGGTTCTAGCACAGATGCTTCTTCTGATGCCACTCTAAAAGCTC  
AATCTAAGGCTGTTGATCTCATGGAGGAAGGACAGCATGGTGGGTCTAAGCTTTCTCCTCC  
CAGAATGCAGGAGAGATGAAAAAAATCACGTGCAAGAGGGAGAGGTCCAACAAGA  
TTCTTTGTGCAGTTTAAGCATTGATGAAAAGACCAACAATAAAGAAAGTCATAAATCCT  
CAAAGGTGATCGATGGAATCCCTAGTGACCTGGCAGGATTTTATACTCATCTTGCTACA  
CGAGAGCTGCAGACCATTAATAAATTGTGACCTTGAGTATATAAAGAAGCTTGGTTCTGG  
CACTTATGGAAGTGTATATCATGGAAAATGGAAGGGGTGTGATGTCGCTGTTAAGAGGA  
TTAAACCGAGTTGTTTTACTGATGGCACAGTAGAGGAGGATCGATTGGTTGCAGACTTC  
TGGAAGGAAGCTCACATGCTTGGTCAGCTTCACCATCCAAATATAGTGGCATTTTATGG  
TGATGTTACAGATGGACCAGTGACAAATCTGGCAACAGTGACAGAGTATATGGTGAAT  
GGCTCCTTAAAACAAGTTTTTCGAAGAAAAGATCGAAGTATTGATCGTCGTAAGAGGC  
TGATTATAGCAATGGATGCAGCCTTTGGTATGGAATATCTACATGGAAAGGGCATTGTCC  
ACTTTGATTTGAAATCTCATAATTTCTTGTGAATATGAGGGACCCTCAACGGCCAATAT  
GCAAGATTGGTGATCTGGGCTTATCTAAAATAAAGCAAAGACGCTTGTCTTCTGGTGG  
GGTACGTGGTACAATACCATGGATGGCACCAGAGCTTTTGAACAGTAATAACAAGCTTAG  
TAACTGAAAAGGTTGATGTCTACTCATTGGGATTGTTATGTGGGAGTTATTGACTGGA  
GAGGAACCCTATGTAAACATGCGCTCAGAGGACATAATAGCTGGTATAATTAAGGCAA  
TTTGCACCTGATATCCCAACTTGGTGTGATCCAGCATGGAGGTCATTGATGGAGAAGT  
GCTGGTCACGTGATCCTGATTCTAGGCCATCCTTCACAGAGATTTCAAAGGAGCTTCGC  
ACCATATCAGCAACCATGAACATCAAATGA

**>LOC107432528 (MAPKKK9)**

ATGGAGTGGAGCAGAGGACCCATCATCGGCCGAGGCTCCACCGCCACCGTCTCACTCG  
CCACCGCCCTCCGGTCCAGTGAACCTTCTGTGTCAAGTCCGCAGAGCTCTCTTCTTCA  
GCTTTCTTGCAAAGAGAACAGAGTTTTCTCTCAAATTGAGCTGTCCTCGGATTGTTAA  
GTAAGTGGGTTTTGTGTTAGTAACGAAAACAATGTGCCTTTGTACAATCTTTGCATGG  
AGTACGTGCCCGGTGGCACAATTTCCGATGTAATTCGAAGACATGGAGGGAAGCTGGA  
GGAGTCAGTGATCAGGTCCTACACGTATCAGATTCTACAAGGTTTGGATCATCTCCATG  
TTAATGGGTTGGCGCATTGTGATATCAAGAGCCAGAACATTCTGATCGGAGAAGACGG  
AGCAAAGATTGCCGATTTGGGTTGTGCTAAATTGGTTGGAGTTGATGGGAGTGAAGTC  
TTTGCCACGTGAGAGTTTTCCGGCACACCGGTTTTTCATGGCGCCTGAGGTCGCACGTG  
GAGAGGAGCAGGGATTTGCAGCTGATATATGGGCTATGGGTTGTACGGTCATTGAAATG



GCTACTGGCAGATGCCCTTGGGCTGAGGCAGGTGACCCGGTATCTGCTCTTTATCGGAT  
CGGGTATTCCGGCGATGTGCCGGAGCTTCCGAGGTGGTTTTTCGGATAAGGGTAAGGAT  
TTTCTGAGCAAGTGCTTGATGAGGAATGCAAAAGAGAGGTCGACAGCTAAAGAACTT  
CTTAGACATCCATTTGTTGAATCTATGGGGTGTCAATCAGATCAAGTAAAGGAATTCAC  
AATGATTAGTCCGAGTAGTGTCTTGGATCAAGAATTGTGGGATTCATTGGAAGAATTGG  
AGTCATCTCCTCATGAACCAACATTGAAGGCTGTTCAATTCTGAGTTCTCCAATGGAA  
AGGTTTCAAGTATTGATTGGAGGTACTTTTAGTTTTTCTACACCTCCGAATGTACCCAAT  
TGGAGTGTGGATGAAACTTGGTTCACAGTCAGATGCAATATTGACACTGAGATCTTTGA  
AGATGAGTCGATTTCCGACTCAAGTTCATCATCCATGGATTCCGACCATTCATGAAGAAG  
AGCTTGAAAGTTTAATGTTTAATGATGGATTGTCATCTGATTATTCTTTTGAATAGTTAG  
TACTATTGGCAATGAGAGAGATTTTTTGATACCATGTAACAATATGGAAATTACTTTTGT  
ATTAGAAAATGTCAAATGAAACATACTGCAAAAGATTTTGTTTTATTCAATCTATATG  
TTATTCTATATGTGTTAATCCCACTTTATTTTATTTATTTTTTTTACCTTCTCATACCGCG  
CTTCTTTCTTTATTTATTCCTCACATGCTTTTACCAGCTTCAATCTTGCAACAAGCATT  
GGTAATTAA

>LOC107411974 (MAPKKK10)

ATGCAAGACATGTTGGGATCAGTTCGGCGATCACTTGTGTTCCGTAATCTTCTCCGGA  
CGGCGAAGATTCGCCTTCTCCAATCGGAGTAGGAGGAGGACCAACCTTCACTTTGGTC  
GACAAGATCAATTCCTGCATTCGTAAATCCAGAGTCTTCTCCAAACCCTCATCGCCTCT  
GGCTCCCCCGTCTCCTTCGCCGCCTCCCATGGCCAAGGACAACACGCCGCCGATCCGA  
TGGCGCAAGGGCGAGTTGATCGGTTGCGGCGCCTTTGGCCGTGTCTACATGGGCATGA  
ATCTTGACTCCGGAGAGCTTCTGGCCGTTAAACAGGTTTTGATTGCAGCTAATACTGAT  
TCAAAGGAGAAAGCTCAGGCTCACATCAAGGAGCTTGAGGAGGAAGTGAAGCTTCTG  
AAAAATTTATCTCATCCGAATATTGTTAGATATCTTGGAACAGTGAGGGAGGAGGAAAC  
ATTAAACATTCTATTGGAATTTGTACCTGGTGGATCCATATCATCACTTTTGGGAAAATTT  
GGATCTTTCCAGAGGCTGTTGTTAGAACATACACAAAGCAGTTATTGTTGGGTCTAGC  
ATATCTACATAAGAATGGAATTATGCACAGGGACATTAAGGGGGCCAATATCCTTGTGTA  
TAATAAAGGATGCATTAAACTTGCAGATTTTGGTGCATCAAAACAGGTTGTTGAGCTGG  
CAACTATTTCTGGTGCAAAGTCTATGAAGGGTACTCCATACTGGATGGCTCCTGAAGTC  
ATTCTCCAGACGGGTCATAGCTTCTCTGCTGATATATGGAGTGTTGGATGTACTGTAATC  
GAAATGGCCACTGGAAAGCCTCCCTGGAGTCAACAGTTTCAAGAGGTGGCTGCTTTGT  
TTCATATAGGGACAACAAAGTCCCATCCACCAATACCTGAGCATCTCTCTGTTGAGGCG  
AAAGATTTTCTTCTGAAATGCCTTCAAAGGAACCAAAATTTGAGGGCCAGCTGCATCTG  
AGTTGCTTCAGCATCCCTTTGTAACAGGGGAACCCATGGAATCTCATCCTGCTTTTAGT  
ACTTCTATGATGGAAAATTCTGAAACCTCTTACCATCGAACACCAAGATCTGGAAA  
CCTATAAATGATGACTTGCCTTGAGACAGCTGATGACTGTAATTTGGGTAGTTTGAATT  
GCTCTACTGTGTCTCCTGAGAAGTCATTCAAAGTAAACATCTTTGGAGAATAAACAG  
CAGTGATGATGACATGTGTCAGATTGATGACAGCAATGATATTACGATGGGTGAAGGAA  
GGCTCAACTCATCCTTGATGCCTGACAACCTTAAAGAGCTTTAATCCCATGAGCGAACCC  
TCTGATGATTGGGTTTGCAAATTAGCTGCAAGTCCAGAAGCAGAATGTGAAGGAATGA  
ATTTGGATCCTGATCAAAAATTCATTTGCGTGGTGGCTGCGCAGAACTTTAATGAT  
AGGGAAAAGATTTTTCTTTCTTGTGGACCTTCACTCTCTGAGGATGATGAAGAACT  
TACTGAATCTAAAATTAGAGCGTTTTTGGATGAGAAGGCTCTAGAATTGAAGAACTGC  
AAACGCCTTTATATGAAGAGTTCTACAACAGCATGAATGGAGCTTGCTCTCCTAGTTAT

GTGGAAAGCACATGTGATGAAACTACTCCAAGATACTTGAAATTACCTCCCAAAGTA  
GATCACCAAGTCGGGGTCCAATGGGTACCCCATCTGCAGTGGTTGATGCTCATAGTACT  
GGAAGCCCTGGGAGTAATGGTAAGCGTGTGTCAAATATTTGCAATGCAAGTGATCAA  
GTTACAGGACATTCCTGTAATTGATGGTCAGCAGGAGCCTGGTAGTCCAAGAGATGA  
TGCGCCAAGCTGGTTTGGGAGGGAAAACATCATCACCTAA

>**LOC107412267 (MAPKKK11)**

ATGAAGCACATTTTCAAGAAGCTTCATATAGGAAGCAACCACGACCCTGGTCGATCCA  
ACGAAACTTCTAATACCTCCGTCACGCCGCCACAGACATGCGCCTCCGATACCCGCAC  
TGTTTCCGGTCAGAACTCCGGCTATCCTCCCGCAAGCCCATCTTCGTCTTCGCCGTCGC  
CGTCTTCGGCTTCCACCGTCAGCGCAACTGGCACCGGAATACCTTTCTCAGCAACTATG  
AATCGGTCTGATTACATGTCGTCTGAAGAGGAATTTTCAGGTTTCAGCTTGCCCTAGCGAT  
CAGCGCTTCGAATTCGGATGGTCGCGATGATCCGGAGAAGGATCAAATCCGAGCGGCG  
ACTCTTTGAGCTTGGGGACTCATCGAATGGATTCCGCGAGGGACAAGGACGACGCTG  
CCTCCGAGGCCTTGGCCAGGCACTACTGGGAATATAACGTGCTTGACTACGAAGACAA  
AGTGGTGGATGGTTTTTATGATGTGCATGGATTGTCCACAGAAGCTATTCAAGGAAAA  
TGCCTTCACTTGACAGATCTTGAGACAAACCTTGGAAACTCTGGCTTTGAAGTTTTATTA  
GTCAACCGAACAAATTGATCCTGTGTTGGAAGAGTTAATTCAAATTGCACAATGTATTGC  
ACTAGACTACCCTGTCAGTGAGGTTACCATTTGGTACAGAAGCTGGCTGAGCTCGTTA  
TGGAACGTATGGGTGGGCCTGTAAAAGATGCTAATTTTCATGTTGGCTAGGTGGATGGAA  
AGAAGTACTGAGTTGAGGACATCTCTACACACCAGTGTATTTCCCTATTGGGTCCATAAC  
TCTTGGCCTTTCTCGTCACCGTGCTTTGCTTTTCAAGGTATTGGCTGACAATATCAAGAT  
GCCTTGACTACTTCTAAAAGGTAGTCATTACACAGGTGTCGAGGATGGTGCTTTCAACG  
TAATAAAGTTGGAGGATGAAAGGGAGTTTTTGGTTGATCTCATGGCAGCCCCCTGGAAC  
ACTTATTCCAACACTGACATTCCAAGTGCAAAGACACTACCTTTAAGCCATACAACCCAA  
ATAGCAGTATCATTCCAACACATTATTCACTTAATGATTCTGGAGTGGCTTATTCAGGAG  
CATACCCTCCACTTCAAGGTGAGGGAAGCAGCCAAAATCCTGCATTTGAAAGCAGCTC  
AGTGCTAGGTGCAAATTCAGGTCTGCAAAGGCAGAATCTGTGCCTGCATTCTCTGGT  
TCTAGTGTGACAACACTGGTTCTGGTGTGACAACACTGGTTCTTTTAAAATACCTAA  
TAAAGTGGCTCCTTCAAATCAGTCAGATCATCTTCCATCATCAGCCATTGGGGCTTCTC  
GCTTTAAAGGGAACCGTGGAGCCAATACAGTTGATGGAGGTGTAAGGATGAATATGAA  
TGTAGTTCCATATAATCAAAACCCAGAGGATCCTAAGAATCTTTTGGCCGATCTTAATCC  
ATTCAAATAAAAGGAACTGGCAAAACTTCCGTGTATAACAAAACCATAGAGAATAAA  
GTTGATGAGATCCAGAGACCAAGGAATAATGTTATCCCTGGCCGACCCTCCTGCACCATT  
AATGTGAAAAGTCTGCATGCTTGCAATGAAGTCCCTAGAACAAAAGAGTACGATTATA  
TGGAAGGTCTCTTTCCAAGAATCAAACGTGAACCTAATGATTATAAGTTTAATAAGTTG  
ACTATGGCGGAGGATGGAAACACTAATGAGGGAGAACATCCGAGGGATGCGAAA  
GATTTGCGGAGTGACACAGTAGATGTGGCAAAGAAAATGACGAGATTGATTTCCGTT  
ACCATAGAAAATTCACACATGACACAGTTTTGGGTGCCCATTTGAAGTTGAAGGATCC  
AGAAAGTCCTAGCTCATCGTTGAATCCAGCAGAAATAGGGTTGATAAAGTATTTGATG  
ATGTAGATGTAGGTGAATGTGAAATTCCTGGGAAGATCTAGTTCTTGGTGAAAGGATT  
GGCCTAGGTTTCATATGGTGAAGTTTACCATGCGGATTGGAATGGAACAGAGGTTGCTGT  
GAAGAAGTTCTTAGACCAGGATTTCTCAGGCGCTGCTTTGGCTGAGTTCAAAGGGAA  
GTACGGATAATGCGTCGGCTGCGTCATCCAAATGTTGTTCTATTTATGGGTGCTGTTACG  
CGACCTCAAACCTCTCTATTACTGAGTTTTCTTCCAAGAGGAAGCCTATATCGGATC

ATACATCGTCCTCATCATCAAATTGATGAGAAGCGTAGAATTAAGATGGCTCTTGATGTG  
GCTAGGGGTATGAATTGCTTGCATGCTAGTATGCCACAATTGTTACAGAGATTTGAA  
ATCACCTAACCTTTTGGTTGACAAAACTGGAATGTTAAGGTAGGTGATTTTGGATTGT  
CACGGTTGAAACACAACACTTTTCTGTCATCCAAGTCAACTGCTGGAACGCCTGAGTG  
GATGGCACCTGAAGTTCTCCGCAATGAGCCCTCAAATGAAAAGTGTGATGTATATAGCT  
TTGGAGTAATTTTGTGGGAGCTTGTACTATGAGATTGCCTTGGAGCGGGATGAATCCA  
ATGCAAGTTGTGCGCGCTGTGGGTTTCCAGAATCGTCGCCTTGAAATACCAAAGGAAG  
TGGATCCTTTGGTTGCAAGTATAATTTCTGAGTGTGGCAGACTGAACCAAACCTTGCGG  
CCCTCGTTTGC GGAGCTGACGGTGGCTCTCAAGCCCTTGCAACGGCTTGCTGTCCCTT  
CCAATGTGGACCAGCCAAGTTCACCTCTACCGCAAGAAATCTCGGTGAATCCTACTCA  
AGTGTGA

**>LOC107414154 (MAPKKK12)**

ATGGACTGGACCAGGGTCCGTCGCCCTCGGAAATGGCTCATCGGCCACCGTCTCTCTCG  
CCGACTCTCGCCGCTTCGGTGGCTTTATCGCCGTCAAGTCGGTGGAGTTTTCCCAATCC  
AAAATTTTGCAAAGAGAGCAGAGGATTCTATCTACTTTGAGCAGTCCTTTTGTGGTGAG  
CTACATAGGTGAAGATGTTACCTTAGAGAACGACAACAAGCTCATGTACAATCTATTCA  
TGGAGTATGTACCTGGTGGTACACTACCGATACTAACTATCCGCCACGGTGGTCTCTC  
GATGAATCGCTGATCGGATACTACACACGGCAAGTCGTTTCAGGGGTTGGAGTATTTGCA  
TTCATGTGGGTTGGTACATTGTGACATCAAAGGTAGGAACATCCTGGTCCGGGAAGAT  
GGTGC GAAGATTGCAGATTTCCGATGCTCCCGGTGGGTTAATCAGCCGGCGGAGATCG  
CCGGA ACTCCAATGTTTATGGCTCCGGAGGTGGCTCGTGGTGAAGAACAGGGGTTTGC  
TTGTGATATATGGGCTTTGGGTTGTACGGTCATTGAAATGGCTACTGGAGGTTACCATG  
GTCTAATGTGGGTTGTGACGCAGTTGGTGTCTTTATCGGATTGCATTTTCCGGTGAGT  
CGCCGGAGTTTCCGAGTTTTCTTTCCGAGCAAGCAAAGGATTTCTTGGGACAGTGCTT  
AAAGAGGAATCCGAAACAGAGGTGGACGGCTAGTCAGCTTCTGAAGCATCCGTTTCTT  
GAGGAATTCAATTCATGTTCCAAGCAAATCAAAGAATCTAATCAAGTAGTTGTTCTCC  
AACAAAGTATTCTCGATCGGGGAATTTGGA ACTCGCTGGAGGAATCAGAGACGAGGTGT  
TGTGAGAATGAAAATTCTACTGTTGCTGACGATAATAGGATCAGACGGTTGGCAATGTG  
TTCAGGGTTGCCTGATTGGACTTCGGATCAGAGTTGGGTCACAATCAGAGTGAATCATA  
ATTATGATGATGATGATGAAGATAAGGTTGAAGTGGTTGGTGGGTCAGGAATGGCTTCA  
GTTAGTTATAATATAGAAGATTTTGA AATTCCAGCTCCTTCTGTTAGGAAGGAGTTGGTG  
AATTTATCGTATAGCAATGTTAGTGATAGAAATGGTAGAGATAGTTTTGAAGACTTCAAG  
AACTGTAGGAAAAGCAGTGTAGATTGTAGCAATTTCAATTTTGTAGGGACAAAGACA  
AATTGTTATCTTCTTTAATTTCAAGATGTTAG

**>LOC107415263(MAPKKK13)**

ATGGGATCTGGAAATGGTGTTTACTCGGTTGGAGAGTTCAGCTTGGATTCCAAGTGGTT  
GATCGATCCGAAGCATCTTTTGTGGTCCGAGGATTGGGGAAGGCGCGCATGCCAAA  
GTGTACGAAGGAAAATATAAGAATCAAACAGTTGCTGTTAAAATTGTCAATAAAGGAG  
AAACCCAAGAAGAGATTGCCAAGAAAGAAGCTCGGTTTGCAGGGAGGTTGCAATGA  
TATCCAAAGTTCAACACAAAAATTTAGTGAAGTTTATTGGAGCTTGAAGGAACCTGT  
CATGGTCAATTGTA ACTGAGCTACTATTGGGTGGAACATTCGCGGAAATACCTTTTGAATAT  
GCGGCCAAGAAGCTTGGATATGGGCGTGGCAGTTGGGTTTGC ACTTGATATTGCTCGC  
GCAATGGAATGCTTACTCTCCATGGGATAATTCATCGGGACCTGAAACCTGAAAACCTT  
GCTCTTGACTGCAGACTATAAACTGTAAACTTGC GGATTTTGGCTTAGCTAGAGAA

GAATCATTGACAGAGATGATGACCGCTGAGACTGGGACGTATCGGTGGATGGCTCCTG  
AGCTTTACAGCACGGTTACATTAAGGCACGGAGAGAAGAAGCATTATAACGAACAAGGT  
GGATGCCTACAGCTTTGCAATTGTGTTGTGGGAGCTCATCCATAATAAGTTGCCTTTTG  
AAGGCATGTCAAATCTACAGGCTGCATATGCAGCTGCTTTTAAGAATGTGAGGCCAGT  
GCTGAAAACCTACCTGAAGATTTGGCTTTGATTGTA ACTTCATGTTGGAAAGAAGACC  
CAA ACTCTCGACCAA ACTTCAGCCAAATCATA CAGATGTTGCTGCACTATCTTTCTAC  
CATTTACCTCCAGAGCCTATCATCCCCCTTAGGATGTTCAAATCCGAGAATGCTGTTCT  
GCCACCGGAGTCACCCGGTACTAGTTCGCTGATGGCTACTAGAGATGACTCAGGGGAT  
ACTCCAAAAACAACACAGAAGACAAACCTAAAGGATTTTTCTTCTGCTTTAACCAAGT  
GTTACTGA

**>LOC107417160 (MAPKKK14)**

ATGGAGGAGACACGAGATGATGCAGGGCCAGCAGAGCAGGGGCTTCCTAGTGCTTCA  
TGGTGGCCTTCAGATTTTATGGAAAGATTTGGATCTGTTTCTTTGGGTTCTCAAGATGAT  
AGCTTAAGCAATACAGAATCACCCAGAAATTCTGAGCAAGATGTGTTGTCATCTCAGA  
AAGCATCACAGATTCTGTGGCGTACTGGAATGCTTTCTGAACCAATTCCAAATGGTTTC  
TATTCTGTTATTCCGGAGAAAAGCCTCAAGGAGATTTTGTGATGATATCCCTCTCTTGAT  
GAACTTCATGCTTTGTGGGGAGAGGGTTTTAAAGCTGATGTCATTCTTGTAGATGGCGC  
CAGAGATAAAAAGCTGTCCATGCTGAAGCAATTGATTGCTGCACTAGTGAAAGGATTG  
AACTCAAATCCAGCTGCAATGATTA AAAAGATTGCAGGATTGGTTTCTGATTTCTATAA  
ACGGCCAAACGTGGAAAGTCCAGCAAAGCTGCACTAGAAGAAACCTCCAACTTTTT  
TGAGAATCGTGGTCTGCAGATGCTTGGGCAAATAAGGCATGGTTCATGCCGTCCTCGA  
GCAATATTGTTTAAAGTCTTGGCAGATGCTGTTGGTCTTGAAAGTAGGCTCATGGTGGG  
TTTGCCTAGTGAGGGGGCTATTGAATGTGCGGACTCATATAAACATATGTCTGTAATAGT  
TGTGTTGAATTCTGTTGAATTCTTGGTTGATCTTATGCGGTTTCTGGCCAGTTAGTTCCG  
ACGATCAACCAAGGCAATTTTCATGTGTCATATTTCTGCAGCTGGGGAGAGTGATTCTG  
CTGAGAATGATTCATGTGATTCACCATTAGAACCAAATAGTCCTCTATATGGGTTTTTCAG  
AGAGATTAGATCCTGACAGTACTGAAAAGATGAGAACCTTCAGTTCCGAAGGTTTTGA  
TTCAAATGTGCCAGGACCTTCACTACGAAACATGATGTTGCGAACTACTACTGCTGCCG  
AGAGGAAATTAAGTTTATCTCATAGTGAACCCAACATTGCAAATACATTTTGGCGGCGT  
AGTCGGAGGAAGGTGATTGCTGAACAGCGGACTGCTAGTTCAAGTTACAGGGGCTGTAC  
GGGCAATGAATGAAACATTGAAGCAAATCGGCTGTTGAGAGAGCAGGGTGATGATAG  
ATCATTTTCCCATCATGCGGATGATGGTAATAGAAGTTCTGTTCCGCAGAAAATGATCA  
AATAAGTTCTCAGAAGGCAATTTCAATTACCCTCATCACCACATGATTATAGGAGTCAAAT  
TTCTGGGCGAAGTGGACCTTCAGGTTATGTGGCAAATAATGAATTGGTCTCAAGATGGA  
ATAAAGTTCTTGAGTCTTCTTGTTTAATAACAAGCCTCTGTTACCTTACCAAGAATGG  
AATATCGATTTCTCAGAGTTGACCGTTGAACTCGCGTTGGTATAGGGTTCTTTGGAGA  
AGTTTTTTCGTGGCACATGGAACGGCACAGATGTTGCAATCAAGTTTTCTTAGAGCAA  
GATTTAACTGCTGAAAACATGGAAGACTTCTGCAATGAGATATCCATTCTTAGCCGACT  
TCGACATCCTAATGTTATTTATTTCTGGGTGCATGCACCAAGCCTCCACACTTGTCAAT  
GGTACTGAATACATGGAGATGGGTTCCCTTGATTTATTTGATCCATTTAAGCGGTCAGAA  
AAAGAAGCTTAGCTGGAGGAGGAGGTTAAAAATGTTGCGTGATATTTGCAGGGGATTG  
ATGTGCATACACAGGATGAAGATAGTTCACCGAGACCTAAAAGTGCAAATTGTCTTG  
TGAATAAGCATTGGACAGTCAAGGTCTGTGATTTTGGTCTCTCTAGAATAATGACAGAG  
ACACCCATGAGGGACTCCTCATCTGCAGGAACTCCAGAATGGATGGCACCCGAACCTTA

TTCGTAACGAACCCTTCACTGAAAAATGTGATATTTTTAGCCTAGGGGTTGTAATGTGG  
GAGCTTTGCACTCTGAGTAGACCATGGGAAGGTGTTCCAACAGAGAGGGTAATATATG  
CTGTTGCGAATGAGGGATCGAGATTGGAGATTCTGAAGGTCCACTAGGAAGGTTAAT  
TTCAGATTGTTGGGCAGAACAGCATGAACGGCCAAGCTGTGAGGATATACTCGCCCGT  
TTGCCAGAATGCGAGTACAATCTTCGCTGA

**>LOC107417666 (MAPKKK15)**

ATGGCGATTTGGCCTGGGCTTTGCCTAAAATGTACTTTGGGGCCCCATAAAAGGTATCC  
AAAATATTGGATTTTGAGGGCTCCAGAAATCCTAGATAATGTTTGTGAGGCTTCTTCTTGT  
GAGATCAACCTTATACTGTCCGGGATTTTACCATAAGCTCGGTGAGGGTTCCAACATGT  
CCATAGACAGTTTTGCTAGTTTGCAGACAAGCAATGGTGGAGGATCTGTGCAATGTCT  
ATAGATAACAGCAGTGTGGTTCAAATACGAATGATTCACATACTCGCATCTTGAACCA  
CCAAGGGTTGCGACGTCGTGCAAATGACA ACTACTCTGTTGCACAGAGTGTTAACCGA  
CGAGGAAGAGTTACACATGCCCTAAGTGATGATGCATTGGCCCAAGCCCTAATGGATAG  
CAATTCCCCAACCTTGGGTCTCGAGAATTTTGACGAGTGGACAATTGATTTAAAGAAG  
CTTAATATGGGGCCAGCTTTTGCCCAAGGGGCTTTTGGTAAGCTATATAGAGGTACTTAT  
AAAGGTGAGGAGTTGCTATCAAGATCTTGGAGAGGCCAGAAAATGACCCAGAAAAG  
GCACAGTTGATGGAGCAGCAATTCATCAGGAGGTTATGATGCTGGCCACATTAAGCA  
TCCCAACATAGTTAGGTTTATTGGTGCATGTCGGAAACCAATGGTATGGTGCATCGTCA  
CAGAATATGCAAAAGGGGGTTCAGTCCGGCAGTTTTTGGATGAAGAGACAAAACCGTGC  
TGTTCCATTGAAATTGGCAGTAAAACAGGCCTTAGATGTTGCCAGAGGAATGGCATATG  
TCCATGGGCTTGGGTTGATTCATAGGGATTTGAAATCTGACAACCTTTTAATCTTTGGGG  
ACAAGTCCATTAAGATTGCGGATTTTGGTGTGACGCATTGAGGTGCAA ACTGAAGG  
AATGACACCGGAGACAGGGACTTACCGCTGGATGGCTCCGGAGATGATCCAACACAG  
GCCTTACACACAGAAAGTAGATGTGTACAGCTTTGGGATTGTCCTTTGGGAATTGATAA  
CAGGAATGCTTCCTTTCCAGAACATGACAGCAGTGCAGGCAGCATTTCAGTTCGTCAA  
TAAAGGTGTCCGTCCCATTGTTCCGAATGACTGCTTGCCTGTTCTAAGTGAGATCATGA  
CACGGTGCTGGGATGCCAACCCCTGATGCGAGGCCACCCTTACGGAGGTTGTCAGGAT  
GCTGGAGAATGCAGAACTGAGATATTGACA ACTGTGCGCAAGGCCCGCTTTCGATGT  
TGTATGACACAACCCATGACTACTGATTGA

**>LOC107417677(MAPKKK16)**

ATGTTGGAGGGTGGTGCCAAGTATACTGGAATTGTTGGCCTGAATAACCGAGATAACA  
ACTATTATGATTTGTCCCAAGGATTCTACCATAAGCTTGAGGAGGGTACCAACATGTCCA  
TTGACAGTTTTTGAAGCTTGCAAACAAGCAATGATGGAGGGTCTGTTGCGATGTCTGT  
AGATAACAGCAGTGTGGTTCAAATACAAATGATTCACACACCCGCATCTTGAACCATC  
AGGGTTTGAGACGGCGGCCAAATGACA ACTGCTCTGTGCAACAAAGTGTTAATCATCG  
AGGAAAAGTCACACATGCTTTAAGTGATGATGCCCTTGCTCGAGCTCTCATGGACAGC  
AATTCCTTGACGCAGGGCCTTGA AAATTATGAGGAGTGGACAATTGATTTAAGGAAGC  
TAAATATGGGGGAGGCTTTTGC GCAAGGTGCTTTTGGTAAGCTTTACAGAGGTACTTAC  
AATGGTGAGGATGTTGCCATTAAGATCTTGGAGCGGCCAGAAAATGACTTGGAAAAGG  
CTCAACTGATGGAACAACAGTTTCAGCAGGAAGTCAAGATGCTTGCTACTCTAAAGCA  
TCCAAACATTGTTCTGTTTTATTGGGGCCTGTCGTAAACCAATGGTTTGGTGCATTGTGA  
CAGAGTATGCCAAGGGTGGTTCAGTTCGGCAGTTCTTAGTGAAGAGACAAAGTCGTGC  
AGTTCCACTAAAATTGGCAGTTAAACAAGCATTGGATGTTGCAAGGGGAATGGCATAT  
GTCCATGGGCTAGGGTTGATACACCGGGACCTAAAATCTGACAACCTCTTGATTTTTGC

AGACAAATCTATCAAAATTGCTGATTTTGGGGTTGCCCGGATTGAGGTGCAGACAGAA  
GGAATGACACCAGAGACTGGGACATACCGCTGGATGGCTCCCGAGATGATTCAGCACA  
GGCCTTACACTCAGAAAGTGGATGTTTATAGCTTTGGAATTGTTCTTTGGGAACTGATT  
ACGGGGATGGTTCCTTCCCGAACATGACGGCTGTGCAGGCAGCATTTCAGTAGTCA  
ATAAGGGTGTTCGTCCGATCATTCCAAATGATTGCTTACCTGCTCTTGGTGAGATCATGA  
CCCGATGCTGGGATGCCAATCCTGATGTCAGGCCACCCTTCACCCAAGTTGTCAGAATG  
CTCGAGATTGCAGAGACTGAGATCATGACTACTGTCCGCAAAGCCCCTTCCGCTGTT  
GCATGGTCCAACCAATGACAGCTGACTGA

**>LOC107417907(MAPKKK17)**

ATGATGGATCAATCAAGAACAATAAGCAGCTTCCACGTAATTCCATTGAACATGGATA  
TGAGGAGCTACAGCCCCATCCAGTCATTTGTGGGTGATCCTCTTAGCAATATGCATG  
CTAATACCAGACCCCCTGACCCTAATATTTAGAAAGTTAGACCTGTACTTAATTACTCCA  
TACAAACAGGTGAGGAATTTGCTTTTGAATTTATGCGTGATCGGGTGAATCCTAGGAAG  
CCTTTGCTTCCCAACACTATGGGTGATCCAGTTATGCACCAGGCTATTTGGAATTA  
AGGCATTTTAGGTATCAGCCATGCAGAGTCTGAAAGAGGGTCGGAAGTTTCAATGCAC  
AGCATATCACAAAAGGTCCAGAACAATTTGAGAATAAAAACTCATCTTCTCATGGAG  
GCAGAACTAACTATTCGTCAAGTCAATCGGTACCACGAACTTCATCAGGCTATGAGAGT  
AGTCGAGGAATTCATGGCTATACCTCTTCTGGAGCCTCTGATAGCTCATCAATGAA  
GATGAAAGTTCTTTGCAGCTTTGGGGTAAAATTTTACCCCGCCAAGTGATGGAAAG  
CTGAGGTATGTTGGAGGTGAAACACGGATTGTCCGAATTAGAAAGGATGTTTCCTGGC  
AGGAGCTTACCCAGAGAAGTTTATCGATTTATAACCAAATCAAGTAATTAAGTATCAG  
CTCCCCGGAGAGGATCTCGATGCCTTGGTTTCGGTATCTTCTGATGAGGATCTGCAGAA  
TATGATGGAGGAATGCACTGATATAGGCAATGGAGAGGGATCGAAAAGCTAAGGATC  
TTTTTATTTTCTATGAGTGATTTGGATGAACTCAGTTTAGTCTGGGCAGCATGGATGGT  
GATTCTGAGGCTCAGTATGTAGTTGCTGTTAATGGAATGGACCTTGGGTCAAGAAAATC  
CTCGACTTTGCATGGTTTTGCAAGCTCATCAGCCAATAATTTAGAAGATCTAGATAGAC  
AGAGTATTGAGAAAGAGACAAGTAGAGCTGCAGTAGACTCAGTGGGGTTAGCAGTG  
TACCTTTTCTGGAAATATTGTTTCATCATCAACCAGTCATTCTCCAGAGCCTGTCCTAC  
CTGGTTCTCAAGTGATATGAAAATAATCCTCCTTTTTATTATGGCAATATGATGCATTA  
TGAGAAAATATGCCATACCAGCTACCTGATGCCCGCATTACTTCTATTCACTCGCCTTT  
AGTTCTGGTTCAATGCCTGTTCTGTGGTAAGGGATCAACAAGGAGGCTCAACAGAA  
GGGCAAAAATTTGGTGGATCAAGGGTTGAGAACGTGCACATGCCAGTAAAACAGGTG  
AAACTGAAATCTGATGGTTCAGTGCAGCAAGACGGTACCAATGAAAATGTTTGCATGT  
CAGGGAATGCATATGCTGTCTTTACAGCCATACGAGAGTAAATTAATGGATTATTCTC  
CTGTTGAAGAGGCATCAGTTGCAGTCACTGCTTCTGAGGGTGGTCTGCATTTGTTGTCA  
AAAAATGAGGTAAAGTACCAGGAGCCTGAAAAGGTTTCTGCATCAAATGATTCTGTGC  
ACCTGTTGCAGGTTCTAAATCTAGTGAGGATGATCATTATTCTACATCTAGTACTGCAT  
TTGCTACTGGCTATGCTGGATCTGAGTCTAATGCAATGGATTTAAGTTACTTTGAACAAC  
CTGTGCTTCTCAAAGAGTTTATTATTAGAAAGAATTTCCAGGGAGCAGGCAGAAAT  
GCTTAATCAGGGAGAGTTGCTTAATCGATTATCAAAATCGGACGACTCACATGCTTCTG  
AATATCTTGATCTCATTACGTGCTGATATTTCCCGGCAGGATCCAATAGCAGAAGGAG  
TTGACAAAACATATGAAGATGGGAACCTGGCTCCCCAACTGAACAACCCTCAATGAC  
AAAGCCATTATATGTGGATACTCATATTGTTGATGGTGGACTTGCCAACTTCAGAAGTA  
CAAAGAATTTGCTGATTCTGTTACTCAGAATTCGGAGCTCTTGCAGGACAGTGATGTTG

ATTCAAAGCATGCATTTCCAAATCCTATGGATAGTAAAGATGCTGTGAAAGAGGATAGG  
TCTGACCAAGAAACAATACGCTCAAAGATTCCCATGAGAAGCTCCCAGTTGATGAAA  
TCCCAGAACATGCACATGTAAATCAGAAAACCTTCTGTTGAGCACCAAGAAGATCCTAC  
ATCTGATCTTACAAGACATCATTTAAGTGAGGTCATTGCTAAGGATCCCAGTAGTGATG  
ACACCATGGGTGATGGACAACCATTTCOAAGGTCTGAGAACTTGGCTAAACGTGCTTC  
TCAGGATGCACCTCAATTGGTATATCCACATCAACGCAAGTTTATATTGAAGATAGGTT  
TCCCCGTGATTTCTTTCTGACATATTCTCCAAAGCTGTACTTTCTGAAGATTCCCCTGG  
TGTTGGTTTGCTGCACAATGATGGGGCTGGCTTGAGTTTGAACGTGGAAAATCACGAA  
CCTAAACGTTGGTCATATTTTCGGAATTTGGCACAAGAAGGATATAATCAAATGATGTT  
TCTCTAATGGACCAGGATCATCCTGGATATTCAAATGTGCATGGAAGAGTTGAAGAAGA  
AGATCATATAGCATATCAGCATGCACCTTTAACAGCAGATAGAGCTCTGATGGACCATGT  
AAATCCCAGACTGCAGCAGAAAGTATTGTTCCATGTTTCAATCATCCCCATGCAATGG  
ACACTGAAAGTGTGCAGTTTGGTGCTATAATGGAAAATCGAAGAATGCCAGAATCAGA  
CTATGAGGATGGGAAGTTTGAACCAGGTCTGCTGGTCTACCTCCTCTTGATCCTTCCC  
TGGGAGATATAATTGACATCAGTACCTTGCAGGCCATTAGGAATGATGATCTTGAAGAG  
CTGAAGGAGCTGGGTTCGGGTACCTTTGGGACTGTGTATCATGGAAAATGGAGGGGAA  
CAGATGTTGCAATTAAGAGAATAAAGAAGAGTTGCTTTACTGGTAGATCATCAGAGCA  
AGAGAGATTGACTGTAGAGTTCTGGCGGGAAGCTGACATTCTCTCAAAGCTTCACCAT  
CCAAATGTGGTAGCATTTTATGGTGTAGTGCAAGATGGACCGGGAGGGACATTAGCTAC  
TGTAAGTGAATACATGGTTGATGGTTCTCTCAGGCATGTTTTACTTCGCAAAGACAGGT  
ATCTTGATCGTCGCAAGCGGCTCATAATTGCTATGGATGCAGCATTTGGAATGGAATATT  
TGCACTCAAAGAATATTGTGCATTTTGACTTGAAGTGTGACAACCTGCTTGTGAACTTA  
AAAGATCCACTACGTCCAATTTGCAAGGTAGGTGATTTTGGCCTTTCAAAAATCAAGCG  
AAATACCTGGTTTCTGGTGGTGTTCGGGGAACCTTACCATGGATGGCACCAGGAGTTGC  
TAAATGGCAGCAGCAACAAGGTCTCTGAAAAGGTTGATGTATTCTCTTTTGGCATTGTT  
TTATGGGAGATTCTCACCGGTGAGGAGCCATATGCCAACATGCATTACGGTGCAATTAT  
AGGAGGTATTGTGAATAATACATTAAGACCAACAATAACCAAGTTACTGTGATCCTGAAT  
GGAGAAGGCTGATGGAGCAGTGTGGGGCGCCTAATCCTTTGGCTAGGCCATCCTTCA  
CAGAGATCGCTAGTCGTTTACGTGTAATGTCTGCAATGGCTAGCCAAACCAAAAACACA  
GGTTCAGAAGGCATCTAAATGA

**>LOC107417903(MAPKKK18)**

ATGGAGCAGTCAAGAATAAATAAACAGCCTCAATACAATTCCACTGAACCCGGAAATG  
AGGAACTACAGCCGCATTCTCAGTCATTTGTGCGTGATCCTTTTAGCAGTATGCATATGA  
ATACAAGACCCCTGACCCCAATATGTCAGAAGTTAAACCTGTCCTTAATTACTCCATAC  
AGACAGGCGAGGAGTTTGCCTTTGAATTCATGCGTGATCGGGTGAATCCTAGGAAGCC  
TTTGCTTCCAGATACTGTTGGTGATCCCAATTGTGCACCAGGTTATCTGGAACCTAAGG  
GCATGTTAGGTATCAATCATGGTCTGAAAGTGGGTCTGATATTTCAATGCACAGAATA  
GCCGAGAAAGGTCCCAAACAGTTTGAGAGAAAAAATTCATCTTACATGAAGGCAGA  
AATAACCATGCTTCAGTTCCATCAGTTCCACGAAGTTCATCAGGCTTTGAAAGTGGTAG  
AGGAGTTGTTTCGTGGCTATGCCTCTTCTGGAGCCTCTGATAGCTCATCAATGAAGATAA  
AGGTACTCTGCAGCTTTGGTGGTAAAATTCTACCCCGGCCTAGTGATGGAAAGCTCCG  
GTATGTTGGAGGTGAAACACGAATTATCTGCATAAGAAAGGATATTTCTGGCAAGAGC  
TTATGCAGAAAGCTTTATCGATGTGCAACCAAACCTCATATAATCAAGTATCAGCTCCCTG  
GAGAGGATCTTGATGCCTTGGTTTCTGTATCATGTGATGAGGATTTGCAGAATATGATGG

AGGAATGCTCTGATTTTGCAAAGGGAGAAGGGTCAAAAAAGCTTAGGATGTTTTATT  
CTCCATGAGTGACTTAGAAGATGTTCAAGTTTGGTCTTGGTAGCATGGATGGTACTCTG  
AGGTTCAAGTATGTGGTTGCTGTTAATGGCATGGATCTTGCCTCAAAGAAAACTCATCT  
CTGCATGGTTTGGCAAGCTCTTTGGCAAATAATTTAGATGAGCTAGATAGACAAAGTAC  
TGAAAAAGAGACTAACAGTGCTCCAATAGACTCAGCAGGGATTAGCAGTGTTCCTTTG  
ACGGGCAATATTGTTTACCAGTACGATTCAATCTTCAGAATCTATGATTCCTAGTTCC  
TCTAGTGCTTTTGTAAATAAAGCCTCCTATTTATCATGGGAAGATGGTTAATTCTGGAGAA  
AATATGCAGTACCCATTTCATGATGTCCATGTTCCCTCCTATTCCTTCTTTAGTTTCTA  
GTTCAATTCCCCTCCATGTGAGTATGGCTCAACATGGAGGTTCAACTGAAGGGCAGCA  
GTTCAAGTGGATCAAGAGCTGAAAATTCTCAGATGCCAGTAAAGCAAGTGAACATAAAA  
TCTGAGAATCCAGTGCCGCAAGAAAGTACTCCTGAAAAGGTTTTCTCCTCGGGGAAAG  
CCTATGGTGTCCCTTTACAACCACATGACGGTAATTTGATGAATTATTTTCTGTTGAAA  
ATGCGACAGTTGCAGTTACTGCTTCGGAGGGGGTCTCATTATTGCTTCAAAAAAT  
GAGGTGAAGTACCAGGAGCCTGACAGGGTTGCTTCATCAAATAACTCTGTGAATCCTT  
TGCAGGTTCCCAAGTCTAGTGAGGATGATTTTCAATCCACGACATTTGCCCTGGTTAT  
GGTGGGTCGCAATCCATTGCAATTGACTTGACTTATTTTGAGCAGCCTGTTATTCCCTCAG  
AGAGTTTACAATTCAGAAAGAATCCCAGGGAGCAGGCGGAGTTGCTTAATCGATCAA  
CAAATCTGATGATTCACATGGTTCTCAATTTCTCATATCTCATTCTCGTTCTGATGTTT  
CCAGCAGGATCCAATTGCAGAAGGTGTTGACAAATTGCGTGAAGATGGAAACCAGGC  
TCTGCAGGTTGAACAATCCACCTCAACAGCAAAGTCATTACATGTGGATACTCATATGG  
TTGATGATGGGCTTGCCAGACTTCAAAGTACGGAGAGTCTGCAGATTCAGTTGCTCG  
GATGAAGTCAGAACTATTGCAAGGTGCAGGAAGTGGGTCAAAGCATGAGTTACAAA  
AACTACAGATAATAAAGATGTTACAACCAGTGATAGGACTCTTAAATCTGAGCAAGAA  
ACAATTTTCCCTGCAGATGGCCTTAAAAAGCATGTAATAGATGAAAACCTCTGAACTTCC  
AACTGTAATCCCAAAGCTTCTGTTGAGAACCCTGAGGAACCTTTGTCTAATCAGCCA  
GTTTATCCTTCTAGTGAGGTCACTGGCGAGGATCCTAGTCATGATGACACTTTTCGTTGA  
TACACAACCTTTTCCCTGGACCAAGAAGTCAGCTAAACATGTTTCTCATGACGCACCCT  
CAACTGCTATATCCTCATCTACGCAGGTTGATATTGAAGATCGATTTTCGTCGTGATATCCT  
GTCTGACATATTTCCAAGGCAATATTCTCTGATGATCCCCTGGTGTGGTTTGCTGCA  
CAAAGATGGGGCTGGCCTTGAGTTTAAACATTGAAAATCATGATCCCAAACGTTGGTCA  
TATTTTCATAAATTGGCACAAGGAGGGTTTCTTCAGAAAGACTTTTCTTTGATTGACCA  
GGATCATCCTGCATTTTCATCTGTGCTTGAAAAGTTGAAGAAGGAGATATCAAATCTT  
ATCATCTTACACCTTTTACTACAGATGGAGTTTTGATGGACCATGTTGATTCCCATATGA  
AAGTTGGTGAATTTGATCCTAAAGAATTTCTGCAAAGACTGCAGCTGACATTATAGTT  
GTGCAGTCAAATTATGATCAATCTCAAACGAAGGACACTGAAAGTATACAGTTTAGTGC  
TATGATGGAAAACCTAAGAATGCCAGAGCTGGAATATGAGGATGGGAAGGTTGAAAGT  
AGAAATGTTGGTTTACCTCCACTAGATTTTCCCTGGGAGATTTTGATCTCGGTGCCTTA  
GAGTTACAGGTCATTAATAATGACGATCTTGAAGAGCTGAAGGAACTGGGTTTCAAGGTA  
CTTTTGGGACTGTGTATCATGGAAAATGGAGGGGAACAGATGTTGCAATTAAGAGAAT  
AAAGAAGAGTTGCTTTACTGGGAGATCATCAGAGCAAGAGAGATTGACTGTAGAGTTC  
TGCGCGGAAGCTGACATTTTCAAAGCTTACCATCCAAATATAGTAGCCTTTTATGG  
TGTAGTGCAAGATGGACCAGGGGGAACGCTAGCAACTGTAAGTACTGAGTTCATGGTTGAT  
GGTTCTTTAGGCATGTTCTACTTCGTAAAGACAGGTATCTTGATCGTCGCAAGCGGTT  
AATAATTGCTATGGATGCAGCATTGGGATGGAATACTTGCACCTCAAAGAATATTGTGCA



TTTTGACTTGAAATGTGACAACTTGCTTGTGAACTTGAAAGATCCTTTACGTCCAATTT  
GCAAGGTCGGTGATTTTGGCCTCTCAAAGATCAAACGAAATACCCTGGTTTCTGGTGG  
TGTTTCGTGGAACATTACCATGGATGGCGCCAGAGTTGCTTAACGGAAGCAGCATTAAAG  
GTCTCTGAAAAGGTTGATGTCTTCTCTTTTGGTATTGTTTTATGGGAGATTCTAACCGGT  
GAGGAGCCATATGCTAACATGCATTATGGTGCAATTATAGGAGGTATTGTGAATAATACA  
TTGAGACCGACAATCCCAAGTTATTGTGATCCTGAATGGAGACGGCTGATGGAGCAGT  
GTTGGGCTCCTAATCCTGCAGCTAGACCATCCTTCACAGAAATTGCTAGCCGTTTACGT  
GTAATGTCTACATTGGCTAGCCAAACTAAAACCCAGGTTTCAGAAGCCATCTAAGTGA

**>LOC107418405(MAPKKK19)**

ATGAATCTTAACTGGCTTAAACAAATTTCCAACAATGGCAAGTCCGGAAGGAGGCTCT  
CACTGGGAGAGTACAAAAGGGCCGTGTCTTGGTCCAAGTATTTGGTATCTTCTGGTGC  
AGAGATTAAGGTGAAGGACAAGAACAATGGAGTGCCGACATGTCCCAATTGTTTCATT  
GGCTTTAAATTTGCTTCAGGAAGACATAGTAGGATTTATAGAGGGATTATAAGCAGAG  
AGATGTGGCTATTAAGCTGATTAGCCAACCCGAGGAGGATGAAAATTTGGCTTCTTTGC  
TTGAGAAGCAATTTATTTCTGAGGTTGCTTTGCTTTTTTCGGTTGCAGCATCCAAATATAA  
TCACATTTATTGCAGCATGTAAGAAACCTCCTGTGTTCTGTATCATCACTGAGTATTTG  
GCAGGGGGCTCATTAAAGGAAATACCTTCATCACCAGGAGCCACATTCTGTTCCACTCG  
AACTTGTTCTGAAATTAGCCCTTGACATTGCACGGGGGATGCAATATCTTCATGCACAG  
GGTATACTTCATAGGGATCTCAAATCAGAAAATTTACTGCTAGGGGAAGATATGTGTGT  
CAAAGTTGCAGATTTTGGTATTTTCATGCTTAGAATCTCAATGTGGCAGTGCCAAAGGAT  
TCACAGGCACATACCGTTGGATGGCACCTGAAATGATTAAGAGAAACACCACACAAA  
GAAAGTTGATGTTTACAGTTTTGGCATAGTTCTTTGGGAGCTTTTAAACAGCATTGACAC  
CATTTGAGAACATGACTCCTGAACAGGCTGCATTTGCAGTGTCCCAGAAGAATGCAAG  
ACCACCTTTGCCATCAGCATGTCCAAGGGCAATCAGTCATCTCATTAAATAGATGCTGGT  
CAAGCAATCCGGATAAACGACCTCATTTTGGATGAAATAGTTTTGATTCTTGAAGGTTAT  
GCAGAGTCTCTTGAGCAGGATCCAGGGTTTTTCTCCTACTATAATCCTTCACCAGATCG  
TGCCAATTTTCGATGCTTGTGCGAAATTTGTTGTTTTCAATAGATCTACCTCTTCAAAAAGT  
CCAAAACTTTCTTAA

**>LOC107418996 (MAPKKK20)**

ATGGAGAACCCACCGGCAGATGAGCTTCTTCGGAAGATCCAAGAGCTGGAAGCGGGT  
CACGCCACCTGAAGCAAGAAATGTGCAAGCTGATGCAATCTGATTCGGACGATGTGA  
AATCGGAGCATCTTCGTCCTCATCCTTCATACCACCACCAGAGGTCCCACTCAATATCG  
CCTCAGCGATCCAGGTTTGGTTTCGCCAAGGAGGAGGGTTGGAGCTGGTGGTGGTGGT  
GGTGGCGGAGGCTTTGATGGTTGGGGTTCATGCAAGAAAGGTTTCGGCGTCGTTTCGGC  
ATTCGTCTCCTTTGCAAAGGGAGAGTCCGAGTCGTGAACCTTTAAATGCCGGAGGAGC  
AACTGGAACAGGACCTTCGGCTCTCAACTTTACTGATAGGCAGTATCTGAATATCTTGC  
AGTCCATGGGGCAGTCTGTTTCATATATTTGATCCTGATGGTCGTGTTATTTACTGGAACA  
GGTCAGCTGAAAATTTGTACGGTACTCTGCAGAAGAAGCTCTAGGCCAAGATGCTATT  
GAGCTTTTGGTAGATCCCCGTGACTATGACATAGCCAATAATATATTTCAACGTGTCACA  
ATGGGGGAGAGCTGGACTGGTTCAGTTTCTGTGAAGAATAAAATGGGGGACAGGTTTT  
TGGCTGTTGTAACCAATACTCCTTTCTACGATGATGATGGCACTTTGATTGGGATTATTT  
GTGTTTCAAATGATTCACGCCCTTTTCAAGAGACCAAGCTTGAATTTTCTGATTCTAAG  
CACTCTGAAAGCAGCTTCAATCGTCCAGAAACACTGTAACAACCTAACTTGGTCTTG  
ATCCTCAGCAGCCACTTCAAGTTGCCATTGCGTCGAAGATATCAAATTTGGCAACCAAG

GTGAGCAACAAAGTTAGGTCTAGGATTCGTGCCGGAGAGACCAACATTGATCGAGAA  
GGTGGAAAGTGGAGATAGTCATCATTCTGATCATGGTTATTCAGATTCTGTTCTCTCTGAC  
CACAGGGAAGATGCAACCTCAAGTGGAGCTAGCACACCTAGAGGTGATATACCCCAA  
GTGCTTTTGGTATATTTTCCCAAGTTGATGAGAAATCTGCAGGAAAACCCTCCAGGGAT  
TCTGGAGATGAGAATGAAGGAAAATCTGCAATTCACAAGATTATATCATCAAAGGCAG  
AAGCATGGATTGGTAAGAAATCCCTTTCTTGGCCGTGGAAAGGCAATGAGCGAGAAGG  
GTCTGAGGTTAAGAGTTCTCGTATTATTTTTCCTTGGTTACAAAATGATCAAGATAATGA  
TTCTCTTCATCCGAAGAGTAATGTTATGAAGCCAGAAAACAGTGCGAATGAGAGCCAT  
CGGCCTGCGAATAATGAGGCTTCTGGATCCTGGTCATCGTCTTTCAATGTTAACAGCAC  
AAGCAGTGTGAGCAGTTGTGGAAGTACAAGCAGTAGTGTGTGAATAGGGTAGACATG  
GATACTGACTGCCTAGATTATGAAATCTTATGGGAAGACTTGACAATTGGAGAGCAGAT  
TGGTCAAGGTTCTTGTGGAAGTGTGTATCACGGCCTGTGGTATGGATCAGATGTTGCTG  
TCAAGGTATTCTCAAAGCAAGAATATTCAGATGAAGTAATACTTTTCCTTCAGACAAGAG  
GTATCTCTTATGAAAAGACTGCGGCATCCAAATGTTCTGCTCTTTATGGGAGCTGTTACT  
TCACCTCAGCGTCTTTGCATTGTAACAGAGTTCCTACCACGGGGAAGTTTGTTCGCTT  
ACTACAAAGGAAGTCAATACTAGATTGGAGAAAGCGTGTTCATATGGCTTTGGATA  
TAGCACGGGGCATGAATTATCTTCATCATTTTAAACCCACCTATCATTATCGAGATTTGA  
AGTCTTCGAATCTCCTTGTTGATAGGAAGTGGACTGTCAAGGTTGGTGATTTTGGTCTT  
TCACGTCTTAAGCATGAAACATATCTCACAATAAGACTGGGAAGGGAACGCCTCAGT  
GGATGGCGCCAGAAGTCTTCGCAATGAACCCCTCAGATGAGAAGTCTGACATATACAG  
CTTTGGTGTATATTGTGGGAGCTTGCTACTGAGAAGATTCCTTGGGATAATCTCAACTC  
AATGCAGGTGATTGGAGCAGTAGGGTTCATGAATCAAAGGCTGGAGATCCCAAAGAT  
GTAGACCCACAATGGGCTTCAATAATTGAGAGCTGCTGGCAGATGATCCAGCTTCTCG  
GCCAACATTTCAAGAAGTCTGGATAAGCTCAGGGAGCTTCAAAGACACTATACTCTC  
CAGTTCCAAGCAGCACGTTCTGCCACCGGAGATAACACTCAAAGGAGTTGTAG

**>LOC107420999(MAPKKK21)**

ATGCATCACATACCACGAATTTTCAACCGTAGCAAGCGAGAAAAATCCATGGATACGA  
AGAAGAACCCTAGGAAGCCAAGGCTTGAGCGCCGCAATGCTGCGAAGCACATTGATT  
ACGAAGCTTCCACGTCTTCTTCGTCGATGGAGTCGACGCCGTCGCCGTCGCTCCACAG  
TCGATCGCTGGATTTGTCCGACAAGATGAGCTTCCGTGTCGAGGGAATTGAGGGCGAG  
TTCGACATAATATGCCGGACCTTGGGGCTTTCGGGTATAGAAGATTCGCTATCCCGTCG  
GCGGCATGGGAGGCTCGGAAGATCCGATCGATCTCCGATATTCTACCTAGGTCCAGGCT  
TAATCGGTTAGATAGTTGAGTGGTTCAGCCAGGGAGGAACTGAAGGATGAGGTTATT  
CAAGCTGTGGCCGAATTGAACGATAGGGTCGTCGGTAGCGTTAGAATTAGGGGTGGTG  
ATAATGAGTTGCCTCAGGCTGATCTTGCCGAGTCCCGTGGTTGTTGTGTTGCTAACGAT  
GGAGCGTGCGATGGTGATTTCTGTCGGTGGTGGTGGTGGTGGTGGGGGAGGAGGCGGA  
GGAGGAGGAATTAAGGGTGTTCGGCCGCCGGTGTCTAAGCCTCCTCCTTCGATGAGGC  
TTCCGGTGATTGATAAGACGTGCTCGACTTGGGACATTCTGAGGGACTTTGCGCCCGAT  
GAAGAAACATCACCTGCGCAACTTCTCCATAAAACGTATAATTCTTCCGATGAAGAAG  
AAGAAAAGAAGAAGAAAAGCACCACCAAGAGAAGAAAACCTCCAAGAAGAAGA  
ATCACATCAAGAAGAACAAGTCCACACGGAAGAAGTTGTTAGGCAAAGAGAGG  
AGTCTGCGGTGAGGCTTCCGGAGAATGCGTTACTCTCCGAGTCGTGTTCTGTTCACTAC  
GTCCAATGACGACGACTTCTTAGCAGTACCACAGAGCCCACGTCGAATATTTCCGCC  
AATGCGAGATTAAGGCCATCATCACGTATTGGGAAAAGGGCGATCTTCTGGGTCCG

GATCGTTTGGATCTGTTTATGAAGGAATAACTGATGATGGGTACTTTTTTGCTGTGAAG  
GAGGTTTCCTTGCTTGATCAGGGAAGTCAAGGAAAGCAAAGTGTTTATCAACTTGAGC  
AGGAGATTGCACTGTAAAGCCAGTTTGAACATGAAAACATTGTTCAATATTTGGGCAC  
TGATAAGGATGAATCAAACTTTATATTTTCTAGAACTTGTAATAAAGGTTCTCTGCA  
AAGTCTTTATCAGAAGTATAACCTTCGAGATTCACAAGTTTCTGCCTACACAAGACAGA  
TACTGCATGGTCTGAAGTATCTCCATGACCGAAATGTGGTTCACAGGGATATTAATGT  
GCAAATATATTGGTCTCTGCCAGTGGATCTGTTAAGCTTGCAGATTTTGGGTTGGCTAA  
GGCAACCAAATTGAATGATGTTCACTCTTCCAAGGGGACTGCATGCTGGATGGCACCT  
GAGGTTGTTAATAGGAGGAACCAAGGATATGGGCTGCCGGCTGATATATGGAGCCTGG  
GATGCACTGTGTTGGAGATGTTAACCAGACAGATCCCGTACTCTGATTTGGAGTGGATG  
CAGGCAATATTTCGAATAGGAAAGGGTGTGCTACCTTCTGTTCTGATTCTCTCTCGAA  
AGATGCACGGGATTTTATCTTGCAGTGCTTGAAAGTTAATCCAAATGATCGTCCTACTG  
CTTGTGACGCTGTTAGACCACCCATTTGTGAAGAGACGTCTTTCCTCATCTTCTGGCTCT  
GCATCTCCTTACCATTTTGGGGGGCGGAGTTAA

>LOC107421353 (MAPKKK22)

ATGCCTCACAGAACAACTTACTTCTTTCCGAGGCAATCCCGGATCGACGATTCGATGA  
ATCTTCCAAACAGCTGTTGGCGGATCACGAGAAAAAGGTATCAACAGCGACCGCTAGC  
ACACCCACTTCCACCACCACCACCACCCCCCTACCCCTACATGCAAGGACACTA  
TCAGTAACTTTCAAATCGAAAGCGACAGAAAGCCATCAAAACAGTTCTCTGTCAACAG  
CAAATCCTCAGCTGTATCGCAGCTCTTACGGGTTCATGGAAAATCACACACCAAACAG  
CACACACAGCCACAGCAAGTCAAACCGCAACAGCAACAACATTTGCGAGCCTTCTGC  
GATTGGTTGGCCGAGAAGAAAGCCGAACGTTCCACCACCGCGGCACGTGAAACCA  
CCGCGCGATGAGGACCGTGAGCTTCTTATCCACCACCTCCTGAGTCGGTTCCCGAAG  
TGGCACCGCCTGAGTCGGTGGTTAAGGATCGGAGTGTGGATAGGAATTCGACCGGCA  
GGTTTCGTTGCCGAGAGTTTCCAGTGGGAGTAGCTATGCGGGAAGTTTGTCTCTGGG  
ACGACTCTAGATGGGAATCTGTGATCGATGTTAAGGACAGTTATTGCAAAGTGTCGTC  
GTTTTCCACGGCGAGACATGAGGAAGTGGAGGTGGAGGAGGAAGAGGAGGTGGACA  
AGAATAGGGGGAGCTTGGCGCAGAAGACTAAGGAGAGTTATTATCTACGGCTTGCCTT  
GGCTAAAAGGCTCACTTCTCAAGCTTTTCTTGATCATACCGAGCCTCTTCTTATGCAAG  
TTTCTGGACCTGAGTCCTCTAACGCCGAAATCGTTTCTTATCGACTCTGGGTGAGTGGC  
TGCTTGTCTTACTGACAAGATATCAGATGGTTTTTATAACATTTTGGGGATGAATCCA  
TATGTGTGGGTGATGTGCAATGATCCGGAGGAAGGAAAACGCCTACCACCATTGATGT  
CACTTAAAGCAATCGAACCCAGTGAGACATCTATGGAAGTGGTCTTATTGATAAGCGA  
GGAGACTCTCGTCTGAAGGAGCTTCAAGATAAGGCGCAAGAGCTGTATTGCGCTGCAG  
AGAATACGTTAGTGTGGTGGA AAAACTAGGGAAACTTGTTGCCATCTATATGGGGGG  
CACTTTCCCTGTTGAACAAGGGGATCTTACATGCGCTGGAAACTGGTAAGCAAAAAGG  
TTGAGGCATTTTCAGAAATGTATTGTGGTCCCCATCGGCAGTCTTCTATGGGGCTTTGC  
AGGCATCGCGCTATTCTTTTCAAGAAGTTGGCAGACTACATAGGCTTGCCTTGTGCGAT  
AGCTCGCGGTTGCAAGTATTGTGCAGCTGATCATCGGTCTTCTTGTCTTGTCAAATTG  
AAGATGACAGGCAATCCACAAGGGAATATGTAGTTGATTTAGTTGGAGAACCAGGAAA  
TGTGCATGGTCCAGATTCTCGATCAATGGAGGATTTCTTTCTTCAATGCCTTACCATT  
ACAAAGTTCTCATCTCAAAGAATTCCAAGAACCTTACATGGATGGTGCATCTTGTGTC  
AAAGTGTA AACTCAAAACACACATGTCTTCCA ACTGAAAGTCCCCTTTTTCAGGCTT  
TGGGAAAGAAACCCAGAAGGCTGAGGAAAATACTTTTTCCAATAATCTAAAGGGTGT

ACAAATGGTCCAGTTTATCAAGCCACATCTGGGAAGGAATCTTCTCCAATGCCTTTGGA  
GATGAAGGGGAATTTTGAGAATTGTGTCATCCAGACTCCGGTGATGCCTTCTTTCCATG  
GAAATCAAGCTGTAAAGAGGAGCCCAAGGAAAAAAGAGTGCCAAGCAACCGAA  
ATTAAGAGTGAACCTTATCCAGTGAATCAGATGCTGAGGAGGTTGAGAGTGAACCTGAC  
AATGGAGGCAACTTTTCTTCTGTGACAATCCCCAGATACTTGAATCTTGAACCATCTCT  
TGCAATGGATTGGCTTGAGATCTCATGGGATGAGTTGCATATCAAGGAGCGTATTGGTG  
CTGGTTCAATTTGGGACTGTGCATCGTGCTGAATGGCATGGATCGGATGTTGCTGTTAAG  
GTTCTTACGGTCCAGGATTTCCATGATGATCAGTTAAAGGAATTTTGGAGAGGTTGC  
AATAATGAAACGTGTACGCCATCCAAATGTAGTCCTTTTCATGGGTGCAGTTACAAAGC  
GTCCACATCTGTCAATAGTGACTGAATATCTGCCTAGGGGTAGTCTATATCGCCTTATAC  
ACAGGCCTGCTTCCGGTGAAATTTGGATCAGAGGCGGCGATTACGCATGGCACTGGA  
TGTGGCTAAGGGGATCAACTATCTCCATCGTTTAAACCTCCTATAGTTCACTGGGATCT  
TAAATCTCCCAATTTGTTGGTTGATAAAAATTGGACAGTCAAGGTATGTGATTTTGGGC  
TGTCAGATTTAAAGCAAACACCTTTATATCTTCCAAGTCTGTTGCTGGCACGCCTGAG  
TGGATGGCGCCAGAATTTCTTCGTGGAGAGCCCTCAAATGAGAAGTCTGATGTTTACA  
GTTTTGGAGTGATCCTTTGGGAACTTGTAACCTTGCAACAACCTTGGAGTGGACTAAG  
CCCTGCACAGGTTGTTGGAGCTGTTGCATTCCAAAATCGGAGGCTCGCAATCCACCA  
AATGCGTCTCCAGTGTTGGTTTCCCTGATGGAATCTTGTGGGCTGACGATCCCGCTCA  
GCGGCCAGCTTTTAGTAGTATAGTTGAATCGTTAAAGAAGTTGCTGAAGTCTCCAGTGC  
AACTGATACAGATGGAGGGGACGTAA

**>LOC107420099(MAPKKK23)**

ATGTCGAAAATGAAGCATCTACTGAGGAAGCTTCACATCGGCGGGGGTTTCAATGACC  
CCCAAAGATTGGGCGACGCCCGACCCGTAAGTCCCGAATTCGAATCATCCCGATCC  
GTCCACCTCTTCTACGGCCTCGTCGTTGTCGTCGGCCTCGACTTCCAGTCCACTACAA  
TGGCGGGAATTGCGACTGTTGAATCTGTTGCCGATCGTTTGGGTGGGGATAGTAGTGGT  
GGTGGCGTGGAATTTCAATTTTTTGGAGGAGGAGTTTCAGGTGCAGTTGGCCATGGCGA  
TTAGCGCTTCGGATCCCGATGCGCGCGACGACCCCGAGTCCGCTCAGATCGACGCCGC  
TAAGCGGATTAGCCTGGGTTGCTCTGCTGCTGTCAACGACAGCCCAGCCCTTGTTGATT  
TTCTTTCGCTTCGATACTGGAACATAATGTTGTAAATTATGATGAAAAGGTGGTGGATG  
GTTTTTATGACGTATATGGTGTTACATCAGATTCACTTGCACAAGGGAAGATGCCATTAT  
TGGTTGATCTTCAAGCAATATCTGTTTTAGATAATATTGATTACGAGGTGTTGTTGGTCA  
ACCGCATGGTTGATCCTGAGCTTCAGCGGTTGGAGAAAAGGGCATATGCAATATCAA  
AGAATCTCATGTTTCTAGACATGGTTTGTAGTTTTAAGTGGCTTGATCCAGAACATTGCTAA  
TATTGTTGTTGATAGAATGGGTGGCCAGTTGGTGATGCCAATGAAATGTTGAGAAGGT  
GGGTTGTGCGGAGGTATGAATTGAGGAGTTCAATGAACACTATCATACTTCCCCTTGGA  
TGCCTTGATGTTGGACTTTCACGCCACAGAGCCTTGCTCTTTAAGGTATTAGCTGATAC  
GATTAATCTTCCATGTATGCTGGTCAAAGGGAGTTATTACACTGGTACTGATGATGGAGC  
TGTGAACTTAATTAACCTTGAAAACGGAAGTGAATATATTATTGATCTGATGGGGGCTC  
CTGGCACACTAATCCGGCTGAGGTACCCAGTAGTCAGCTCCAAAATTCTTTCCTTGGT  
ATGAGGAGCTTTTCAGATGTGAAAGTGATGCCCACTGGTCCAAGATTTCTTCGTGCTGG  
AGGAATTGGACACTAGCGGTTTCCAAAGTAGGAAGTTCAAGGTGATGAAGTATCA  
TATGGAGACTCTGGGTCAAAGATAATGAGAGGACCCTTCTTGGAGAAAATCCAATTG  
TGAGATGTGAGAATGAGTTTGGTAAGCCTTACCATCTCCACATAGATCATCTCAAACCT  
TCACTTGGCACTTGTGGAAAAACATCGTTGGCACAGAAAAAGAAAGTAAAAAATGTAT

CAAAATATGTCATCAGTGCAGCAAAGGACCCGGAATTTGCACAGAACTGCATGCTGT  
CTTGTTAGAAAGTGGTGCCTCACCTCCTCCAGATTTATTTCTGGATATAAGTTCACAGGA  
TCTTGATGAAGGCAAAGTGCCTTGGTTCGAATCCAAGCAGTAGATCAGGAAATTGCATCT  
GACGGAGTGCATATAAACACAGATAACTTAAGGTCAAGTCTTGAGAGATCTCTCATAACC  
TTTTTCTGGAGGGGAGAATTCTAACTATGTTAGTGTGGATAACATGAAAAAACGAGCTC  
CTATGGTTTTAGCTGACAAGCAAATGAATTGGAGATAATTTCCAATAAGTCTAAATTTG  
CTCTAACTTCTGATACTCTTAGCGAGGGATTTATGCTTCTTGTTAATGAACCTAGTGAAA  
TGACCCAGACTGATGCTGTAAATATAGATATGGCTTCTTCTGATCCATCAAATATGTACA  
CACGATCTTCACAGGAAGAAGCAGTTTAAACAAACCTGCCATGCCTTCTCAAGTCAACTC  
TGGTCAAAGACATCTTGAAAATGCCTATGTCAATGATGATAACATGATTGTGATGGAAA  
GAGTTGATAATGGCTTTGTTATTGGTTCTTCTGGTCAAAGTGAGGGAATTAACCCAGTG  
CTGGGGGAAGCTGCAGAGTGGGAAATTCCATGGGAGGATCTTCGGATTGGTGAGCGCA  
TTGGTATTGGTTCATATGGTGAGGTTTATCATGCGGAATGGAATGGCACTGAAGTTGCT  
GTGAAGAAGTTTCTAGACCAAGGATTTTCTGGTGAAGCATTGCTTCAGTTTAAATGTGA  
AGTTGAAATCATGTAAAGACTGAGACATCCAAATGTTGTTCTTTTCATGGGGGCAGTTA  
CTCGGCCCCCACATTTCTCTATACTGACAGAGTTTCTTCCCAGGGGGAGTTTATATAGAT  
TACTGCATCGCCCTAATTCTCAACTTGATGAAAAAAGGCGAATGAAAATGGCACATGA  
TGTGGCCAAGGGAATGAATTACCTTCATACTAGCCATCCTACTATTGTGCATCGAGATCT  
GAAGTCTCAAATCTCCTTGTGATAGAACTGGGTTGTTAAGGTTTGTGATTTTGGTT  
TGTCACGCATGAAGCACCACACATTTCTGTCTTCAAAGTCTACTGCTGGAACGCCTGA  
ATGGATGGCACCTGAGGTCTTAAGAAATGAACCAGCCAATGAGAAGTGTGATGTGTAC  
AGTTTTGGTGTGATATTATGGGAATTGGCTACCTGCCGTATCCCATGGAAAGGCTTGAA  
CCCCATGCAGGTTGTTGGAGCTGTTGGGTTCCAGAATAGGCGTCTTGAAATTCAGAA  
GAGGTTGATCCAGTGGTAGCCAGATAATGTATGATTGTTGGCAAACGGAGCCAAATTT  
ACGACCCTCTTTCTCGGAACTCATGCTCCGCCTCCGACATCTTCAACGTCTAGTTGTTG  
AAAGATCCAATTCCACAAATGAACGATAA

**>LOC107422567(MAPKKK24)**

ATGACCAAGGAGGCTCGAGCTGGTACTTCCAGCCAACAGTTCTACAAAGATACACCAA  
ATGTTGTGTCAAACAACAGAGCTGCAGCAGATAGAGATGTAGATAACTTTTGTATACAG  
ACCGGTGAGGAATTCTCGACAGAGTTTCTGCAGGATCGTGCTGGGCTAAGGAGATTAG  
CACCGGTCATGACTAATGTCAATCAGCGCTGCCAACAAGATCTGGTTTTAAATTATAAT  
CAAACCATCAGCAGCTGGCATATGAGGATCTCAGTGGCATTCTTGGGTTAAGAAGAG  
TGGACTCTGAATGCAGCTCGGAAGTATCAGATTTTGTTCATGGTTCAGGATATTTTCTG  
CTGAAGTAGATTACAAGGTGCATCCTAATAATATAAACAGATATCATTGGGAATATGGTG  
CTGCTATTGGACAAGTACCAAGTAAGCACGTTGATAACCGTGATCGTGTTCCGCCGGTA  
CTACCAACTGCTCCACCGTTTTATGTACTCGATTCCGCTCAGGCATACCATCCTTATGTG  
CAAGGGTTTTCTGACGGTCTGTGTCTAGCAAGATGAGATTTCTCTGCAGCTTTGGGGG  
AAGAATATTACCAAGACCAAGTGATGGGAAGCTTAGATATGTTGGCGGAGAAACACGA  
ATCATATCCATCAGGAAGAACATTACCTGGGAGGAACTAGTGAAGAAGACTAGCACAA  
TTTTTAGCCAACCACACACTATCAAGTACCAACTTCCAGGTGAGGATCTGGATGCTCTT  
ATATCCATTTGTTCCGATGAGGACCTTCATCATATGTTAGAGGAATATCTAGAGCAGGAA  
AGAACCGAGGGTTCTCAAAGATTAAGGCTTTTTCTTATACCTTTAAATGAATCTGAAAG  
CCCAAGTTCTGTTGAAGCAAGGGCTACCCAGACAAATGATGTTGAAAATCAGTATGTT  
GTTGCTGTTAATGGGATGTTGGAACCAAGTCCCAAGAAGAGTTCAAGTGGGCACAGTT

TGACAAGCCAGACTAGCCAATTGGGCAATACCTTAGAACATAGTCCAAGATTTTCATAGG  
GACTCACCTACATCTACATATATTTTGGAGAATAAGGATCATAGTCCAAGACCTCCTGCT  
CAGTATACAACTGTACTTCAGGGTAGGGATCCCAAGAATTCTGATGTGATAGATCGACC  
ATACGCTGGCGGTGATGAAGGGAGTTCTTCCTTTCTTATGGGAAAACCTCCATGTCAAG  
ATTCCTGTAACGTTGATGCTTTGAGTCGTTGTCATGGGCTTCCACTCACAGATAACCATA  
ATCAGACCAAGTATTTGGTAGAGGCTGATTGGGCGAATAGGGCGTCCGACATCTGCTTT  
CACCATCTGGGCCAGGAGGAAAACCTTTGTGTCTTCCGCGCAAAATGTTCAAACCTGGTG  
TACGCTTTGAGAGAGTGATGCCTAGGGAGAGCTCATTCCATTCTAACAATTCTGGTTCT  
CACCAAGATCACCTACCAACTTTGTTGTCCGAACTGAGATCAAAGATGTTCCCTCACA  
ACAAAATGATGCATGCCCTTTCTGACTCTCTGCTGCAAGAACATTATGACAGACCCTCA  
GATGGATTTATGCCCTGTGTCATCAAAAATTAAGAGAGACAAGTTGCTTCCAATAAC  
AAGGTCTAGTTCATCAAGAGAATGTGTAATGCAAGGTGTTGAGAAAGCTGAATCCCAA  
GTAGCTGTGCATGAAAATCAATTCACAGTCAAGAAACCAAGCCATTCCAGGGGAAAG  
GGGAGTGAGGAGTTGTTGAAGTGGACACACAGGAAAAACAGTTCTGGTGATCAGAAA  
AATTGGAATCACCATGAAGGAAATGTTGATGTTAAATCAAAGAATAATTCTCTTGAAAG  
TAGCAACTTACCAAATATCAACTACATGCATAAAAATTGTGTATCCTCACAAGAGTTGC  
AAATCCCTGAAGGAATGGTTTCTGCTTCCCCAGTGACACCATTAGAAAATTTGTTGGAT  
ACTAGGAGCCTAAATTCTATGCATGATCAGCAAAGTTCTACCACTCAGAGGATAAGTTG  
TCAAAGATCCCTCAGACGAAAAACACCTGCTGCATCTGATGAATTTGTTGGCTTTGAAT  
CTCTAGCTACAAGCTCTAAAGTGGCTTCAACTGTCAGTTCAGATAGTGAAGCATCTCTT  
CATGATAAGGAAGCTATGAATCGTGCTTACAATGAGATTGAAATATTAAGTTTTAGCGG  
AGAAGCTATTGAAGTGCCTAAGTTTGAATATGCCATCTCTGTCCAATCACAGCCTTTAG  
ATGATTATCATGACAATGAGGCAATGGAATCACCGATTATTGTTGAAGACATAACTGGC  
ATAGCAACTCCTGGCATTCTTCTCCTCTCGAGCGGTTGCATATGTAGAATACACATGT  
AGTGATGATGAATGTACATCTCCTAGAGAAACAAAAGCAGACAGTAGCATTACAGGAAT  
CTTCTGGAGAGGTTGAGAATGATAGTGCTGACGGTAGGGATGAATCTATAAGTATGAGT  
GATGCAGCTATAGCGGAGATTGAAGCAGGAGTTTACGGTTTGCAGATCATAAAGAATGA  
TGATCTTGAAGAACTGCAAGAGCTAGGATCTGGTACATTTGGAACGTTTACCATGGGA  
AGTGGAGAGGAACAGATGTTGCTATTAAGAGAATTA AAAAGAGTTGCTTTTCAGGCAG  
ATCATCGGAGCAAGAGCGGCTGATCAAAGACTTTTGGCGAGAAGCACGTATACTGTCA  
AATCTTACCATCCAAATGTCGTAGCATTATGTTGTTGTTTCTGATGGACCAGAGAC  
AACATTGGCAACTGTAACCTGAGTTTATGGTCAATGGCTCATTGAGGCATGTCCTACTAA  
AGAAAGATATAGTGCTTGATCGTCAAAGAGGCTCCTAATTGCGATGGACACAGCTTTT  
GGCATGGAATATTTGCATTTGAAAAATATAGTTCATTTTGATTTAAAATGTGACAATTTG  
CTAGTGAACCTAAGGGATTCTGAGCGACCCATATGCAAGGTTGGAGATTTTGGGTTGTC  
GAGAATTAACGCAACACGCTAGTATCTGGTGGTGTGAGAGGAACCCCTCCATGGATG  
GCACCAGAGTTATTAAGTGGTAGCAGTAACCGGGTGTCTGAGAAGGTTGATGTTTTCTC  
ATTTGGTATTGTGATGTGGGAGATCCTGACTGGGGAAGAACCATATGCTAACATGCACT  
GTGGTGCTATTATAGGGGGAATTGTAAATAACACACTAAGGCCTCCTATTCCAAAACGT  
TGTGATTCTGAATGGAAAAAGTTAATGGAAGAGTGCTGGTCAGCTGACCCTGCATCCC  
GGCCATCATATACAGAAATTACAAACAGGCTACGGGATATGTCAATGGCGCTGCCAAA  
AAGCGACAGAATGTTACAAGTAGAAGAGTCTAA

>LOC107423026(MAPKKK25)

ATGCAAGACATCTTCGGATCGGTCCGGCGGTCCTTAGTGTTCCGAACTCAAGGTGTGG

ATGATAATGGCGGATTCGGTGGTCTGGTCGAGAAAATCGGCACCAGCATTGCAAATC  
GCGAATCGGATTGTTCTCCAAACAGTCTCTTCGGGCTCTCCCTCCGGCTCCGAAGAAG  
GACGATACGCCGCCGATCCGGTGGCGGAAGGGCGAGTTGATTGGTTCCGGTGCCTTTG  
GTAGGGTTTACATGGGGATGAACCTGGACTCCGGTGAGCTTCTTGCTATCAAACAGGTT  
CTGATCGCGCAAATAGTGCTTCCAAGGAGAAAACACAGGCTCAGATTTGGGAGTTGG  
AGGAAGAAGTAAAGCTTCTGAAGAATCTTTCACATCCAAATATAGTTAGGTAAGTTGGA  
ACTGCTAGAGAGGATGAGTCGTTGAACATTCTGTTGGAATTTGTTCCGGGTGGATCGAT  
ATCATCTCTACTGGGGAAATTTGGATCCTTTCCTGAGTCTGTGCATAAGAATGTACACGA  
AACAGCTATTATTGGGTCTTGAGTACCTTCACAAGAATGGAATTATGCATAGGGACATC  
AAGGGTGCAAACATCCTTGTGATAATAAGGGATGCATTAACTTGCAGACTTTGGTGC  
CTCAAAGAAAGTTGTTGAGCTGGCTACTATAAATGGTGCCAAGTCAATGAAGGGTACT  
CCATATTGGATGTCTCCTGAAGTTATTCTTCAAACCTGGGCATAGCTTCTCTGCTGATATAT  
GGAGTGTGGATGTAAGTGTGATCGAGATGGCTACTGGAAAGCCCCATGGAGCCAGCA  
GTATCAGGAGGTTGCAGCTATCTTCCATATTGGAACAACAAAATCTCATCCACCAATCC  
CTGAGCATCTTTCTGCTGAGGCTAAAGATTTTCTGTTGAAATGCTTACAAGAGGAACCA  
AACTTAAGGCCCTCTGCATCAGACTTGTGTCAGCATCCATTTGTAAGTTGGAGTATCA  
GGAACCTCATAGAGTATTCCGCACCTCATTATGGAATCTGGAACCAGATGGCAACAC  
CTGGGGGAAATCTTAGGAACTCCTTCAACCCTGCAATTAGAAGGTCAACCTGCGCAGG  
CTTGAAAGATATTTTTGATATGGGTAGTGTGAGGTGCTCAACTGTATATCCTGAGAATTT  
GTCAGAAGTGAGCTCTCACTGGGGACCAATGAATTGTGACGATGAGATGTGTCAGATT  
GATGATCAAGATGATCTTATGGTTAGTTCATTAGTCAAGTTCAAATCTGCCTCAGTCTCT  
AATGATTTAACAAAGAGTTTTAATCCTATGTCTGAACCAACTGATGATTGGCCATGTAA  
GTTTGACGAGAGTCTAGAGTTGGCTAGAAGTGGAACAGACTTATCTCCTGGTACACA  
ATTCAAAGGCTGCCGGCAGTCTGGGGCATCTGATAAGGAGGAGACTGGTTTTGAAT  
TTGCCACGGGCCATTGGCTGCTGAGGATGACGATGAAGTTACAGAGTCAAAAATTAG  
AGCTTTTCTTGATGAAAAGGCATTAGATCTGAAGAAGCTGCAAACCCCTCTATATGAGG  
AGTTCTATAACACATTGAATGCAACTGATCCTCAAAGAGTGAATGGAATTATGAATGCT  
GTAAATGCTTCAAATAATTGGAATTTGCCCTCCAAGAGCAGGTCTCCAATCAGGCACC  
TCGTAGAAGACTGTCTGCAATGGTTGATGCTGCAAAAACCTGCAAGCCATGGGACTGTG  
AGCCATTCCAAAATTGTATCAAATGCTAGCATTGTGCATAGTCGAGCTTTACAGGAAAT  
CCAGCCCCCTCAAGCTAGTGAATGGAAGGGCTTCTCTTGATGCTCAGGAAGGATCA  
TTAGTCCAAGTGCAAGCTTCTCTGAGAGGCAAAGGAGGTGGAAGAAGAAGACTTGTT  
CAAGAGCTTGAAAGGAAGCGAGAGATGATGCGACATGCAGGAGGAAAGACATCATCC  
CCAAAGGATCCGGTTCTAATTCGACAGAGAGAGCGGCTACGAGTTGCATTCCCTGGAA  
AATGA

**>LOC107423093 (MAPKKK26)**

ATGGATTCTAGGACAAGTGATGGTGTGGAAAGTGACAAAACACCGATGAAGATGGACA  
ATCAAAAAGGCATTATAAACTCAAAGGCTGAAGATACGGGAAGTTTCAATAGCAAAGA  
TATGGTTTTTACAGAGCCGATAAAATTGATCTGAAGAACTTAGATATACAGCTTGAGAAGC  
ATCTGAGCAGGGTTTTGACAAGAAACACCGATCCCCAAAAGCCTGAAGAAGAGTGGG  
CCATTGATTTATCAAATTTGGATATTAGATATGTTGTAGCTCAGGGGACCTATGGTATTG  
TGTACAGAGGCACTTATGATAATCAAGATGTTGCAGTCAAAGTGTGGACTGGGGGGA  
GGACGGTATTGCTACAGCTGCTGAAACTGCTGCTTTGCGGGCATCATTTCCGGCAAGAG  
GTTGCTGTTTGGTACAAGCTTGACCATCCTAATGTTACAAAGTTTATTGGAGCTTCAATG

GGAAC TTCAGATCTAAAGATTCCTTCAAAAAATCCTACCGATGGTAACAATTCCCATCC  
TTCTAGGGCATGTTGTGTTGTTGTAGAGTATCTTCCCGGTGGAACACTCAAAAAGTTTC  
TAATTAGAAATAGAAGAAAGAACTTGCCTAAAGGTTGTGGTCCAACCTGCTTTGGA  
CCTCGCTAGAGGTCTTAGTTATTTGCATTCAAAGAAAATTGTACATCGTGATGTCAAAA  
CAGAAAATATGTTACTAGATGCTCATAGGACATTGAAAATAGCTGATTTTGGTGTGCTC  
GTGTTGAAGCTCAGAATCCAAGGGACATGACTGGTGAAACCGGTACCCTTGGATACAT  
GGCTCCGGAGGTTCTTGATGGAAAGCCATAACAATAGAAGGTGCGACGTGTACAGCTTT  
GGCATATGCTTGTGGGAAATTTATTGTTGTGATATGCCTTACCCAGACCTTAGCTTTGCT  
GATATATCATCTGCTGTTGTAGACAGAATTTACGACCGGAAATTCCAAGATGCTGTCCA  
AGTGCATTGGCAAATATAATGAAAAAATGCTGGGATGGAAATGCAGACAAACGTCCTG  
AAATGGATGAAGTGGTGAGAATGTTGGAAGCAATTGATACGAGTAAAGGAGGAGGGA  
TGATACCTGAGGACCAAACCTCCAATGTGTTTCTGTTTGGGCCGTGCTCGCGGCCCTTGA  
>**LOC107423594(MAPKKK27)**

ATGGAAAAC TTCAAGTATCCATCTTACCACCTTCCAAGAGAATGAGGGGAGCAGAAA  
CAATAGATTCAGAAGGTCCGTACAGGCTGCTATACTGTTCAAGTAAGGGAGACACAGA  
AGGGGTAGTGCAGGAATTAGAGAAAGGTGTGGAGCCTAATCTGGCTGATTATGATAAA  
AGA ACTGCTCTCCATCTGGCATCGTGTGAAGGTTGTACGGAGGTTGTTGTTCTACTTCT  
AGAGAAAGGTGCAGATGTCAATTCCATTGATCGTTGGGGGCGAACTCCACTGTCAGAT  
GCTCGTAGCTTTGGTCATGAAAGCATCTGCAAGATATTGGAGGCTAATGGTGGAAATTGA  
TCCGGTGGGGCTTACTCCCAGATTCCATGCTATACTATTGATTATTCTGAGGTGAACAT  
GAATGACGCAATACTTATTGGAGAGGGGTCATATGGTGAAATATATTTGGTGAATGGA  
GAGGTACAGAAGTTGCTGCAAAGACGATTCGCTCCTCTATTGCATCAAATCAAAGGT  
CAAGAATTCCTTATGAAAGAACTTGCTTTGTGGCAAAGTTGCGCCACCCCAATATAG  
TTCAGTTCCCTGGTGTCTAAACAATTGTAGCCGATTGATCTTCCCTTACCGAGTATCTTT  
GCAATGGAAGTTTGCATGACATATTAAGAAAGAAAGGAAGACTTGATCCTCAAACCTGC  
AGTTGCTTATGCTCTTGATATTGCCAGAGGTATGAATTATCTCCATCAGCATAAATCACAT  
GCTATAATTCACAGAGATTTGACCCCAAGGAATGTGTTACAAGATGCAGCTGGCCGACT  
CAAGGTTACTGATTTTGGATTGAGCAA AATTGCACAGGAAAAAGATGTTTTAGGTTATA  
AAATGACTGGAACA ACTGGTTCCTTTGATA CATGGCACCGGAGGTATATCGCCGTGAA  
TCTTATGGGAAAGGTGTTGATGTCTTCTCCTTTGCTCTAATCGTACACGAGATGTTTCAA  
GGAGGACCATCAAATCTGGCAGATGATCCAGAACAAGTAGCAGATAAACGCGCATATG  
AAGATTCCAGACCGCCTCTCTCCTTATTATACCTGAACCAATTAGGATACTTCTTC  
AAAAATGCTGGCACAAGAATCCGGATTCAGACCTACATTTGAAGATATAATTTAGAG  
CTTGAGTCTATTCAAGACAAGTTTCAGACTACCGAACCAATGCCTTCAAGTTGCAGGT  
GTCCATCCTATGA

>**LOC107424157(MAPKKK28)**

ATGGAGCAATTTTCGACATATTGGAGAGGTGTTAGGAAGTTTAAAAGCTATAATGGTATT  
TCGAGGTAATATCCAAATCAATCAGAAACAATGCTTTTTCTGTTTCGATATCTTCTGCTT  
TGCATATGAATCAATAGCAGAAGAGATGGAACATAACCTCAGATTCGAAGAGAAGCAC  
ACGAAATGGAAAATTCTTGAGCAGCCATTGAGAGACCTCTACAGGATATTTAGAGAAG  
GAGAAACCTATATTAGACAATGCTTGGAAACA AAGGACTGGTGGGCAAAGCCATAAC  
TCTTATCAGAACTCGGATTGCGTTGAGTTCCATATTCACA ACTTGCTTTGCTGCATGCC  
AAATGTCAATTGAGGCAATTGAAACTGCTGGAGAAATCTCCGGATTGGATCAGGATGTG  
ATGCAAAAAGAAAGAAACATGTCTACTCCAACAAGTACAGGAGAGAGTACAGAGATTGG



AAACTTTTCCAGTGGAGATTTGGGAAGCAGTACCTGATCACTCAGGATTTCTGCAACC  
GGATTGACACTGTTTGGAAAGAAGATAGATGGACTTTGCTTAACAAAATCAGGGAAAA  
GAAAATCTCAGGCTCAACGAAATACGAGCAGCGTCTCATAGACCTCTTTTTCAAAGC  
TTAGATGGCTTGGAGCCATTGAATGGGAGGCTCTTCCCCTGTTCAATTCTTGTGGGATC  
CAAGGACTACCATGTGAGACGAAGATTAGGGAGTGGCAGCCAATACAAAGAGATCCTA  
TGGTTAGGTGAAAAGCTTTGTATTGAGACACTTCTTTGGTGACATCGAAACCCTTCAGCC  
GCAGCAGGAGATCACTTCGTTGCTATCTCTTTCCCATCCAAACATAATGCACTATCTTTG  
TGGTTTTACTGATGAGGAGAAGAAAGAGTGTTTTCTGATCACTGAACTAATGAACAAA  
GATCTTAGCAGCTACAACAAAGAGATTTGCGGGCCAAGGAAAAAAATCCCGTTTTCGC  
TTCCTGTTGCGGTTGATCTGATGCTTCAAATTGCAAGAGGGATGGAATATCTTCACTCA  
AAGCAAATCTTCCATGGTCATTTAAATCCTTCCAACATACTTGTAAGACCAAGAGGTAT  
TTCCTCAGAAGGAACTTGCATGCAAAAGTTTCAGGTTTTGGCTTAAATTCTATTAGGA  
GATTTACCACTAAAAGCCCTTCTAATCATAATGGAACACTTCCATTCATCTGGTATTCTC  
CTGAAGTTTTGGAGGAACAAGAACAACACTGGAGCTGCTGAGAACTCAAAGTATACAG  
AGAAGTCAGATGTTTACAGCTTTGGGATGGTTTGTCTTGAGCTTCTGACCGGAAAAGT  
CCTTTTGAGGATAGTCATCTCCAAGGTGACAAAATGAGCAGAAACATCAGGGCAGGA  
GAGAGGCCGCTGTTCACTTTCCAGTCACCAAAATATGTGACCAATTTGACAAAGAAAT  
GCTGGCATACTGACCCAAATCAAAGGCCAAGCTTCACATCTATCTGTAGGATTCTTCGT  
TACATAAAGAGGTTTCTAGCAATGAATCCGGATCATAATATTCAGCTTGATCCACCCGTC  
CCCATGTAGATTACTGTGACATCGAGTCAAGGCTTCTCAGGAATTTCCCATCTTGCCA  
ATCATCGGTATCGCAGATCCCATTTTCAGATGTTTGTATAGAAATTTAGAAAAAGAAAA  
AATAAGTGCAAGCCTAAAAGATAATTCAGAATCAGGAAGTGATGGAGCTTCAGTTTGC  
GGGGATGATCATATAACTACAGTGGATGATCCATTTCCCATCATCACCATAACAGAAAG  
GAAGTCTTTAGCATCACTTGATGTTACGAACAGAAAACCTTTCCATTAAGAGATCTCCAG  
ATTCAAGACTGAACAACTACCAGGGACACCGAGAGGACGATCAGTAAGGCCTCCAC  
AAATGTCGCCTTGTGGGCGTAGTATGCGAATGAGTTCAGAAAGCCAGCTAATGGCAAT  
GAGTCCAAGAATACGAAGAACATCATCTGGTCATGCATCAGATTCAGAGATCTCATGA

**>LOC107424505(MAPKKK29)**

ATGGAGTGGGTTTCGAGGAGAAGAAATCGGTAGTGGAAGCTTCGCTACAATCAGTTTAG  
CAGTACCCAGAAAAGCCTCAGCTGAAATTCCTCCATTGATGGCCGTGAAATCTTCCGA  
AATCTTCAACTCTGCTTCGATCAATAACGAGAAAGAAATACTGGATCAGCTCGCAGATT  
GCCCACAAGTGATTCGGTGTTCGGAGAAAACACTACAGCACTGAGAAAGGCGAAGAAT  
TTCATAACTTGATGTTGGAGTATGCTTCCGGAGGCAGCTTGGTTGATCAGCTCAAGAAA  
AATGGCGGTCGGTTGTTCGGAATCGGATATCCGACGATATACGAGGACGATACTCAAAGG  
TCTTTCGTTTATCCATACGAAAGGTTTTGTTCACTGCGATATAAAGCTTCAGAATATCCT  
AGTGTTCGAAAACGGCGCGGCTAAGATTGCAGACTTTGGATTGGCGAAGAAAACAGG  
GGAGAAGAAAACAGAGGTAGAGCTGAGAGGCACTCCTCTGTATATGTCTCCTGAATCT  
GTAAACGACAATGAGTACGAATCGCCTTCGGATATTTGGGCACTTGGGTGCGCAGTGG  
TTGAGATGATGACCGGAAAACCGGCTTGAATTGCGAACCAGGTTTCGAATATCTGTGC  
GCTTTTGATAAGAATTGGAGTTGGAGAAGAATTGCCCAAGTTCCAGAGGAGTTGTCT  
GAGGAAGGAAAAGATTTTCTGGGAAGATGTTTTGTGAAAGATCCGAGAAAACGATGG  
ACGGCTGATAGGCTTTTGAAACATCCGTTTATCTCCGACGACGACACTGTTTCATTGGA  
GGAGTTATCTACGTCGCCGAGAAGCCCTTTTGATTTCCAGAAATGGGTTTCGATGCAAT  
CGACGGTGCGATTTTCAAACACTGTCTGAATTTTACCAGGAATCGGAAAATTGGTTTCGG

AAGGGAATTGGATTCTTACTTTGGTTTCGTCGTATTCCTCCTCTTCTTCTACTTGTTTA  
GAAAATCGGCTCCGGCGGCTTATGTCCGATGAGACACCCTATTGGTTAGTTTCAGACAG  
TTGGGTCACAGTAAGGTGA

**>LOC107424832(MAPKKK30)**

ATGCAAAAACGAGCTCCAGCAATGGCGGAACATGTGACGCAAACAAACAAAGAGCTC  
TTAAGGCTCTCGCTTTCCTACTCTCTGGACACTATCGGCAACTCCAACCGTTCGACTCAC  
TGCAAACGACGAAACCAATGATTCTGGCAACGAATTCGTCTTCAACATTGACCCCAGC  
TTGCTTATTGACCCTCACAGCGTCAAGATAGGCCGTTTGATTGGTGAAGGCCCTCACTC  
CATCGTCTATGAAGGATTGTACAAATCCAAGCCCGTTGCTGTTAAGATCATAACCAA  
TGAGATCATCAGCTGTAAGTGTGGAACGTAAAAAAGATTCAGAGGGAGGTTACACT  
GCAATCAAAGATGCAACATGAAAACATTGTCAAGCTTATCGGTGCCTCAGTGGAGCCG  
ACTATGGTAATAGTTACCGAACTCATGAAAGGCGGTACTGCAAAAGTACTTGTGGA  
GCATCCGGCCAAGGCCCTTAGATCCAAAGCTTTCATAAATTTTGCCTGGATGTCTCT  
AGAGTTATGGAATTTTTGCATGCAAATGGCATCATCCACCGTGACCTGAAGCCAAGCA  
ACATACTTCTTACAGAAGACATGAAACAGATTAAGCTTGTGACTTCGGGTTAGCTAGA  
GAGGAGATCTCGGGTGAAATGACTAGTGAAGCAGGAACCTTATCGGTGGATGGCTCCCG  
AGTTATTTAGCCTGGACCCCTTCCTAGTGGAGGAAAGTTACAATATGATCACAAAGTG  
GATGTGTACAGCTTCTCAATTGTTCTTTGGGAGCTGCTCACAAACAAAACCTCATTCAA  
GGGAAGGAATAGCGTGATGGTTGCATATGCTACTGCCAAAAAATAAGACCATGTCTG  
GAGAACATTCCAAGGATTTAGTCCCTCTCCTGCAGTCCTGTTGGGGAGAAGACCCGA  
AAAGCCGACCAGAGTTTCTGGAAATCACAGTCTCCCTCTCCAACCTACCAGAATTTACT  
CTCAATAGATATTAAGCTACCGAGATTGTCGAGACTGAACATCCCAAAAGCAACACA  
ATTACGAAGGAAGACCCCTGCAGGAACCAATATCAATCCTCAGTCCAAAAATGCTGTTG  
TAAAGGTTAAGAGACGTAGGAAATCTTACCCAGTTTCTCCGTTGCTTTGATTATTGC  
TCTGCTCAATGA

**>LOC107425633(MAPKKK31)**

ATGGGTAAAAAATTGCCTGCTTGGTGGCCGAGAAAATCGAGTAAGAACAAGAAGAA  
CATCGACAGAATCAGCTTCAGCACCAAAACCCACATGGAAACCACAACAGCTTCCTAA  
AATCTCCCATCAGGACCGATAATAAGAAAGCCAAAGACAAGCCCAAGAGCTTTGACGA  
AGTCTTCCCCCGCGGTTTCGCCGAGGGCCAGCAAGGACTTTGGTGTCTCCGGGTGGATCA  
TCTTCTGCGTTTTTCGGGTTTTCGATTCCGGATGGTCCAGAGAAGCGTGGCCATCCTCTGCC  
TCGGCCATCTGTATCGTCCACGCAAAGCATTGGGATTGATCAGGCGGTTGGGTTGGGAT  
CCGGGTCGTTCTCGGGTTCAGCGTTAGCTCTTCTGGGTCTTCGGAGGACCACCCGGT  
TGCTCATGATCATGGTCAATTTAGTGCTTTCAGGTTGGGTTTGAAGGGATCACCTGCTTT  
GGGATTTGGAGGAAATGGCGATCCGAAATTCAACGCAAGGTCAAGAAGCCCAAATCC  
AGGGTCTAGGGGACCCACTAGCCCCACATCCCTCTCCATCCTCTGTTTAGTGGCATGG  
GTCTCGAGTCTCCAACGGGGAAGCAAGAAGATGGAAAGAGCCAATGTCATCGGTTGC  
CTCTCCGCCAGGTTCCCCTACTAGCCCTTCTGCCTTGTCTAACACTAGAAGTGGTGCT  
GTTACTGAAAGCGCATCCTGCACAGTCTCAAATGGAAAAAGGGAAAGCTTCTAGGG  
AGGGGAAGTTTTGGCCATGTTTATGTTGGATTTAACAGTGAAAGTGGACAAATGTGTG  
CGATAAAGAAGTCAAGGCTTGTCTGATGATCAGACATCGAAAGAAAGTCTTAAGC  
AACTGCACCAGGAGATATATTTGCTTAGTCAGCTCTCACATCCGAACATTGTTTCGCTACT  
ATGGAAGTGAATTGGCTGAAGACACCCTCTCAGTTTATTTGGAATATGTGTCTGGTGGT  
TCGATCCACAAATTACTTCAAGAATATGGCTCCTTTAAAGAACCTGTTATTCAAATAT

ACCAGGCAGATTACTTCTGGGCTTGCATACTTACATGGAAGAAACACAGTGACACAGGG  
ACATCAAAGGGGCAAACATATTAGTAGATCCCAATGGCGAAGTCAAGTTGGCAGATTT  
TGGCATGGCTAAACATATAACAAATTGTTTCGTCGATGCTCTCTTTTAAGGGAAGTCCATA  
CTGGATGGCTCCTGAGGTTGTAATGAATACCAATGGATACAGTCTTGCGGTGGATATATG  
GAGCTTGGGGTGTACAATCTTGAAATGGCTACGTCCAACCTCCATGGAGTCAGTATG  
AAGGGGTGGCTGCAATATTTAAAATTGGGAACAGCAAAGATATTCCAGAAATCCCTGAT  
TATCTTTCCTATGATGCAAAGGATTTTGTGAGGCTATGCTTGCAACGAGAGCCATTGTC  
ACGTCTACAGCATCCCAACTGTTAGACCACCCTTTCATTCGGGACCAAACAACAACA  
AGAGTTGCTAACATCAATCTTACCAAAGATGCCTTTCCTATGCTTTTGATGGAAGCAG  
GACACCGGTAAGTCCATGA

**>LOC107426395(MAPKKK32)**

ATGGATTCAAGCAAAGGTGAGGGTGTGGAGACCTTGAGAAGGATGAGAAATCAAAT  
AACAGAGAAGGAGATGGTTCCTCTGGTAAAGCCAAGGCGTTGGGTCTACAGGGAAAG  
GATGATTTGGGAAGCATAAGTGAGAAAAATATGCTATTCAGAGCGGATATGATTGATTTT  
AAGAGCTGGGATGTGCAGTTGGAGAAGCACTTGAGCAGGGTTTGGTCTAGGGAGAGA  
GAAGCGTGTAACAAGGAAGGAGGAGTGGGAATTCGATTTGTGTAAACTGGATATAAGAT  
ATCTGGTTGCTCAGGGAGCTTATGGTACTGTATATCGTGGTTCCTACAATGGTCAAGATG  
TTGCTGTGAAGATTTGGATTGGGGAGAAGATGGTATGGCCACGGTTGCTGAAACAGC  
TGCTCTTCGGGCAGCATTTCGGCAAGAGGTTGCTGTTTGGCATAAGCTTGATCATCCAA  
ATGTTACGAAGTTTCTTGGCGCTTCGATGGGAACCTCAAATCTTAAAATCCCTTCCAAC  
AGCACATCAAGTGACGACCAAATTTCTTTCCTTCCAGGGCTTGTGCGTTATTGTTGA  
ATACCTTCCAGGCGGGACACTAAAAAATTTTAAATCAGGAATAGGAGAAGGAACTT  
GCCTATAAGATTGTGATTCAACTTGCTTTGGATCTTTCTAGAGGTTTGAGCTACCTTAC  
TCAAAAAAGATTGTACACCGGGATGTCAAAACTGAAAACATGTTGCTAGATGTTGGTA  
GGAATCTGAAAATTGCTGATTTCCGGTGTGCTAGAGTCGAAGCCCAGAACCCAAGGGA  
TATGACAGGGGAGACTGGAACCTCGTTACATGGCCCCAGAGGTTCTTGATGGTAAG  
CCTTACAATAGAAAATGTGACGTGTACAGTTTTGGAATATGCTTATGGGAAATCTATTGT  
TGTGATATGCCTTACCCTAATCTAAGTTTTGCTGATATATCCTCTGCAGTTGTGTGGCAG  
AATTTACGACCGGAGATCCCAAGGTGTTGTCCAAGTTCTCTGGCAAACATCATGCGAA  
AATGTTGGGATGCAAACCCAGAGAAACGCCTTGAAATGGATGAGGTAGTGAGGCTGTT  
AGAAGCAATAGATAACAAGCAAGGGAGGTGGAATGATTCCTGATGACCAGACTCCTGG  
TTGTTTCTGTTTTGCCCCAGCTCGTGGCCCCTAA

**>LOC107426719(MAPKKK33)**

ATGCAGCTCAATAGGTCTGAGAACTTGTGATACCATGACCAATGAGGTTCTGGTCC  
ACCAGGACGTTGGATCAGGCAAGAATCTACCTCAGTTGTTGCAAATGTGGGGAAGAAT  
GTACATGGTAAAAACGTCTTAATACACACAGGTGAGGAATTTCCAGGGAGTATGTTCA  
GGATAGTGTCTGGGCGAAGAATTCCTTCTGGAATTAATACGGCTCAGAACCATGAAA  
AGAAAGTTCTTCTGTTGCTAAAGCTAGGAGCCACGAAAAGAGAGTTTCTGCTGTAAC  
TGATATGACTCAGAACCATGAAAAGAAAGTTGGATATGATTGTAATCAGAATCATCAGC  
TGGGATATGAGGATCTTGCTCGTATTCTGGGGTTAAGGAGGATGAATTCAGAGTGTGCT  
TCGGAACATCTGAATTTCTCTCTGCAAAAGGATCTTCCAGAGAGATTGAAGTTGACG  
GTTATGTAGATAAATTAAGCAGATGCAACAATGAAGAAGGAGATAATGGGCATGGATCA  
AGGAAGCCTTGTGGTGAACATAATTGTGATACTTCTGGTTTTGGACCAACTGGTCCACT  
CAATTATAAATCTGATTCCATAATTGCAACAACCTTATGTTGGGTCAGGAGTTTTAGATGG

TTCTCAATCTGAGAAGTTGAAAGTTCTCTGCAGTTTTGGTGGAAAAATTTGCCTAGGC  
CCAGTGATGGGAAACTCAGATATGTTGGGGGAGAGACACGTATCATCTCAATCCGGAA  
AAATATCTCATGGGATGAGCTTGTGAAGAGAACGTCAAGTATTTGCAACCAACCTCATT  
CTATTAAGTACCAGCTTCCGGACGAGGATCTTGATGCTCTTATATCTGTGTCTTCTGATG  
AGGATCTTCAAATATGATAGAGGAGTACCATGGGCTTGAAAGGCTTGATGGTTCTCAA  
AGACTACGGATCTTTTTGATTCCTTTAGGTGAATCTGAAAGCACAACTTCCTTTGAGGC  
AGGCACCTTACAGCAAAGCAATCCAAATTACCAATATGTTGCAGCTGTTAATGGTATGG  
CAGATCCTAGTCTAGGAAAAATGCTGGAGAGCTGAATTTAGCAAGTGAAGCAAGTCA  
ACCGGAAACTAAGACATCTGCATTTCCCTGTGGAGATTAAGAGTAACTTTAATGCCTTGA  
ATCCTAACCCATTTTTAGAATCCCAGAATATAAACAGATCTTATAATCAGTCTCCTCCTGT  
TACTCCAATTCTGCATCAGCATGGAGATTCCAAGATTATTCACATGCTACCACATGGTGA  
TAACTCATGCCAGGGTAGTTATGAGAGCAACTCTTCTTTTGTCTACTCAGCTACATCC  
TGAGAACTCCAGTTACAAATACCCCTCCAGCTGGGGCATCAAGTTCAATAAATTACCATT  
ATCATGACCCTTATAAGCTTGCTGACGTTGGATATCAAGATCAGCCACATGGTGGAAAT  
TTCAATAACCTCAATCTGAGCAAAGAGTTGGCAACTCCTTTGGTTGTTCGATCAAATGA  
TGGTGATTTTTGGTGGACTCTCCCTTGAGAGGCCAGTGCAAAGGAAAGGACATTTTCAT  
TCTGAAAAGCCTAGTTTGCCTGGAAGATCCTATGGGTCTGTTGTTCGGAATGTAATGA  
CTCTGTTGATTCTTTCCGGGGCATAACCACATGCATTTTCTGACTCCAAATTGCAAGAAA  
GTGGAGGGAAGTCTGTAAGTGCACACTGTTTACAAGAAGGAATGAGCCCATCATCCCC  
CTTGAACCTTGCAAAGGCTCAATTGTCTTTGCTGCTGAACTCAGGTGTCTCACAAAGAA  
AAGCCAACCAAAGTGCATGAGAATATCAATATCGTCAATCCCTGGGAGCAAATAAGTT  
AGTAGATGATGGGTCACCTGAAGGGCACAAAATACTGGATCTCCCAAATTCTTCTCCAT  
GTTGCGAAGCAGTGTGCAGGAAGGAACCTACTCAAAGGGTACTGGTAATACTGATGA  
CAAGTTTCAAACCTTCTGAAAATAATCTCTTTAAATCTGCGTTTATGATGCCTAATCCATG  
TGAGAAAGATTCTTTGACTTTGGAAACAATGAAGAGAACCAATGCAGTAGACCCTCTA  
TTGGACCAAGAAGGAAAGCTTTATGGAGGGAGTTTGCTTACCGCAGGTGTGGAATACA  
AGAACAATTGCCTAATAAAAACCCAAATCCATCTTTTACAAATGTCTCTGAAGATACA  
ATACCTACATCCTCAGCCATGGATTTCAAACCTATGGTAGATAACTTGGTTCGAGCATCCT  
ATTAAGTGTGCACATGAAAAACTGTCCCTGATCTATTGGGCACAAGCCAAATAGTTTC  
CAGTGATCAGAATTGTGCTCTGACTGGGAGATTGATTGATGAACCAGGAAACAGTGAC  
TCAGGTACCGCAGATCCAGAAATCCAGGCTTAGGTCCGACTGTGAGAAGGCTCTCAC  
ACAATGGAAATTCTTTGTCTGATCTAATGCCTGGGTCTCCAATGATTCAATTTGTCCCTG  
AACCTGCACTGGTTCAGCCTGTTGCTAGTAATATGGTTCATGAAGAACCCTTGCTATTA  
AGCTCTGTAAATTTGCATCCATTGCAACCTCGTGGTGATCCTGGTATAAACTCAAATTTG  
CAAGACCAGAAACCGTTGCAAGATGCTGGGTTTAAAGCGAGAGGTTTCTCTCCTTGATG  
ATGATTTTGTGGCTATCCAAATTCAAAGGTTGAGAATATTGGCTTTGGAGGATCCAGTT  
ATGAAGAATCTAATGTTGCAGATGGTAAAAATAAAAATCAGTTGGAGTCAGTGGTTACT  
GTGGAGGATGTGACTGATGTTGTCTTCCCTGGCATTCAAGTCTTCATCCACATGTACTCCA  
TATAACATGGATGAAACCATTTGGTTATGTTATATCCCCTACTGCAACAGAAGTGGAAAG  
CGTCAATCCCGAGTCTGAGTCCGAGGATGGTAAAGCATATGATGAGGACAATGGACCA  
TTTACTGATGCAATGATAGCTGAGATGGAAGCCAGCATCTATGGCTTGACAGATTATAAG  
GAATGCTGACCTTGAAGAACTTCAGGAGTTAGGATCTGGTACATATGGAAGTGTTCATC  
ATGGAAAATGGCGAGGAACAGATGTTGCCATAAAGAGAATTAATAAAGAGCTGCTTTGC  
AGGGAGATCATCTGAGCAAGAACGGTTGACGAAAGACTTCTGGAGAGAAGCACAGAT

CCTCTCAAATCTTCATCACCCAAATGTGGTTGCATTTTATGGGGTAGTACCTGATGGAAC  
TGGAGGAACGTTGGCAACAGTAACTGAATATATGGTGAACGGATCACTTAGGCATGTC  
CTACTTAAGAAGGATAGATCGCTTGACCGTCGAAAAAAGCTTATTATTGCCATGGATGC  
GGCCTTTGGCATGGAATACTTGCATTCAAAGAATATTGTCCATTTTGATTTGAAATGTGA  
TAACTTATTAGTCAATTTGAGGGATCCACAAAGGCCTATATGCAAGGTTGGAGATTCG  
GATTATCAAGAATTAACGAAACACTCTAGTATCAGGTGGCGTGAGAGGAACACTTCC  
ATGGATGGCACCAGAACTGTTGAATGGTAGTAGCAACCGGGTTTCTGAGAAGGTTGAT  
GTTTTCTCATTTGGGATTTCAATGTGGGAAATCTTGACTGGGGAGGAACCCTATGCGAA  
TATGCATTGTGGTGCCATCATTGGGGGAATTGTGAAAAACACTCTTCGACCTCCTGTCC  
CGAACGCTGTGATCCTGAGTGGAGGAAGCTGATGGAACAATGCTGGTCACCTGATCC  
TGAAATCCGACCATCATTTACTGAAATACTAATAGGCTGCGAACTATGTCTATTGCGCT  
TCAGGCAAAGGACCTAGTAATCAGACAAGACAGATGAAGCCTAACATGTCCTCGTAA  
>**LOC107427400(MAPKKK34)**

ATGTATCCTGGCAAATAAGTGTCCATCCACCACCTGCCTTTGGTTCATCTCCTAACCTT  
GAAGCCCTTGCACTAGAAGCCAACAAAGTAGATGATCAAGATGAGGAACATTCTGTAC  
ATGCCCATGCAAAATTTTCCCGACCCATGCATGAAATTACTTTCTCGTCAGATGACAAG  
CCAAAATACTCAGTCAGCTGACTTCCTTGCTTGCGGAGATTGGTTTGAACATCCAAG  
AAGCACATGCATTTTCCACAGTTGATGGTTACTCCTTGGATGTCTTTGTTGTTGATGGCT  
GGCCTTATGAGGAAACGGAGCAGCTTAGAATTGCATTGGAAAGGAACTTCTGAAAAT  
TGAGAAGCAGCCTTGGTCAGATCATCAATCAATATCTTCTCATGTTTTTGGCCTGAAA  
CGGTGATCAAATGTGAACCTGACCATCTAACTATACTCATGATGGAACCTGATGTATGG  
GAAATTGATCTGAAACACTTGAAGTTCGAAAACAAAGTTGCATCTGGATCATATGGTGA  
TCTGTACAAAGGTACATACTGTAGTCAGGAGGTGGCCATCAAATCCTCAAGCCTGAG  
CGCATAGATACAGACATGCAGCGAGAGTTTGCCAGGAAGTCTTTATAATGAGGAAAG  
TTCGACACAAGAATGTTGTACAATTCATAGGTGCATGTACCAAGCCTCCAAGTCTGTGT  
ATTGTAACAGAATTTATGTCTGGTGGAAAGTGTATATGACTACTTGCATAAAACAAAAGGG  
TGTTTTTAAGCTCCCATCCTTGCTCAAGGTTGCAATAGATGTTTCCAAGGGAATGAACT  
ACTTGCACCAAATAACATAATTCATAGAGATTTAAAAGCTGCAAATCTCTTGATGGAT  
GAAAATGATGTTGTTAAGGTTGCTGATTTTGGGGTGGCCAGGGTAAAAGCTCAATCTG  
GAGTTATGACAGCAGAACTGGGACTTATCGTTGGATGGCTCCCGAGGTGTGTATAGTT  
ACTTGTTTGAACCTTCTATTTTTGAAATTCTAG

>**LOC107427543(MAPKKK35)**

ATGTGCTCCAGAAATTGGAAGAAGATCAAAGTTGTTGGTTCAGGTGCTTATGGAACCG  
TTCACCTGGCCATACCTCTAAACCTTCGCCTTTCTTCCAAAACCATCGCCGTGAAATCT  
TCCACGCTCGAAGACTCCGAGTCTCTTCAAAAAGAACAAGGATTTTGGAACACTTTT  
CGAATTGCTCTGAGATCCTTCAATGCTACGGCAACGAATTGACAATTGAAAACGGCCA  
AAGGGTTTACAATTTGCTACTTGAATACGCCAATGGCGGTGACCTAATGGACTTGATCG  
AATCCCGACAAGGTAGATTACCCGAATGCGAGGTTCAAATTTACACCAGGATGATATTG  
AAAGGTCTTCTTCGCATTCATAAACATGGATACGTTTCATTGCGATCTTAAGCCGGAAAA  
CATCCTCGTATTTAGGTCTGATTTGCGCGTGCAGCTTAAGATTTCCGATTTCCGATTGTC  
CAAAGAACCTGGGAAAGAAGATGATTTCTTTGTGAATTTAGTAGTGAGTTTAGGTTCC  
GTGGAACCTCACCTTATATGTCGCCGAATCGGTTGCTTTCGGTGAGATAATCGAAGCG  
CCGTTGGATATTTGGTTCGCTTGGTTGCATAGTGATTGGGATGATTAGTGGAGAGTTCCG  
ATGGCCAAGCTTGGACAACAAGGATTTGGTTCGTTGGCTTGCTTTTAGCAATAAAGAG

CCTGAATTGCCACGTAATATGTCTGCCAAAGGGAAAAATTTCTTGAGGAAGTGCTTCAT  
AAGAAATCCTAGAGAAAGATGGACGGCTGAGATGCTGTTGGATCATCCATTCGTTGCT  
GAAATTGAAGATCACCCACTTAAGTTGGAATCCATCCCTTCTTGCTCACATTCAAAAAA  
CTTTTGCAATCTTTCTTTCATCAAGTTTCAAGGCCCGCCAATGTGGATTTATGTAA

>LOC107428154(MAPKKK36)

无数据

>LOC107428813(MAPKKK37)

ATGACCGTTCGATCTAAACCTAGATGGGCAATTCAGAACCAAGAAGAAGAAGAA  
GAAGAAGAAGAAGAAAATGGTAACAACCTCGGCCGGTTGGCTTCCCAGAAACCGCT  
CTACTTCGTACGAAATCAATTCTTAAAGGGATTAAACGCATTCATGAAGCTGGTTTTGT  
GCATTGTGATTTGAAGCCGAGAACATTTTACTTGTCCCCCAAGAAAACCTCTCTACCA  
CTCCTTTTGTGGCCAAGATTGCAGATTTTGGCCTTGCAAAGGCAGCTCAAGGGCTTAC  
AAGGAGTTCCGAAGTGAAAGGAACCTCATGTACTTACCGCCTGAAGCGGAGAACCTC  
GGTATCCAAGACCAACCTCTGACATTTGGTCTCTTGGTTGACTGTGCTATGTATGTTG  
ACTGGAAAAATTTATCCATGGGATTTGAAATCTTGGGAAGGAAATCGTGAGCTTAAGC  
AGAAGATTTAGAGGATTGTCTGAAATTCCAAATGGGTTATCTAAAAAGGCTAAGGAT  
TTCTTGAAGCAATGCTTTATGAGAAGTCCATATGATAGACCCACTGCTGATATGCTGCTG  
GGCCATCCATTTATTTGTTCTGGATTGGGCAGAGGAGATGATGAAGATAAAGAAGAGCT  
AATGTCTGTCCATTCAGTGCAGGCTTCATCTTGCAAATTGTCTGAGCCTCATGATGAATT  
CAGAGCTAGCTTTATACCTCTTCTAAACTCAAGCTTTGGAGAAACAGAGGAGGTCCAA  
GGGAAGATAACACCTGTAATCTCGGACAGGCTATCAAGTTCTGCCGTCTGCAGTGCAG  
CATAG

>LOC107428906(MAPKKK38)

ATGAGCTCCGACGCACCTGAATCGGCCGATCCGCATCCTGTTCCGGCCTCCTCCGACA  
AGGATAAACAGAAAGAGAAAGCGAGGGTGAATAGGACTTCTCTCATACTCTGGCACG  
CCCATCAAAACGACGCCGCTGCTGTCCGTAAGCTTCTCGAGGAAGACCGCTCTCTTGT  
CCAGGCGAGGGACTACGATAAGCGAACGCCGCTTCATGTTGCTTCACTTACGGTTGG  
ATCGGCGTTGCTAAGTGTGTTGATCGAGTATGGCGCAGATATCAACGCTCAGGATCGATG  
GAAGAACACGCCTCTAGCAGATGCAGAAGGAGCCAAGAAGCATAGCATGATTGAGTT  
GTTAAAGTCCTATGGTGGCTTGTCTTATGGCCAAAATGGAAGTCATTTTGAACCTAAGC  
CTGTTCCACCCCACTGCCCAATAAGTGTGACTGGGAAATTGAACCTTCCGAGCTGGA  
TTTCTCAAACCTCAGCCATCATTGGAAGGGCTCTTTTGGTGAGATCTTAAAAGCGCATT  
GGCGTGGAACACCAGTAGCTGTCAAACGCATCCTTCCATCTCTTTCAGATGATAGATTG  
GTTATTCAGGATTTACAGGCATGAAGTTAATTTACTAGTGAAGCTTCGTCATCCTAACATA  
GTTCAATTTCTAGGAGCTGTAACCTGACAAGAAGCCACTTATGCTAATCACAGAATATTT  
ACGAGGGGGTGATCTTCATCAGTACCTCAAGGAAAAGGGTTCACTTAGTCCTTCAACA  
GCTGTCAATTTTGGCTTGGACATTGCTAGAGGCATGGCTTACCTTACAATGAGCCAAA  
TGTGATAATTCACCGAGACCTTAAACCAAGGAATGTTCTTTTGGTCAATTCAGTGCAG  
ACCATTTAAAAGTAGGAGATTTTGGGCTGAGCAAGCTTATCAAAGTTCAGAATTCTCAT  
GATGTGTACAAAATGACCGGCGAGACTGGAAGTTACCGGTATATGGCTCCTGAAGTTTT  
TAAGCACCGGAAATATGATAAGAAGGTTGATGTGTTCTCCTTTGCAATGATACTTTATGA  
GATGCTTGAAGGGGATCCTCCACTTTCAACTTATGAGCCTTACGAGGCAGCGAAATATG  
TGGCAGAAGGACATAGGCCTTTTTTCCGCTCCAAAGGATTAATCACTGAGCTGAAGGA  
GTTAACAGAGCAGTGTGGGCTACCGACATGAACCAAAGACCTTCTTTCTTGGAAATT

CTCAAAGGCTTGAGAAGATAAAGGAAAATCTGCCTTCAGATCATCATTGGAACATATT  
TAATGCATAA

**>LOC107428931(MAPKKK39)**

ATGAGCTCCGACGCACCTGAATCGGCGGCATCCGCATCCTGTTCCGGCCTCCTCCGAC  
AAGGATAAACAGAAAGAGAAAGCGAGGGTGAATAGGACTTCTCTCATACTCTGGCAC  
GCCATCAAACGACGCCGCTGCTGTCCGTAAGCTTCTCGAGGAAGACCGCTCTCTTG  
TCCAGGCGAGGGACTACGATAAGCGAACGCCGCTTCATGTTGCTTCACTTCACGGTTG  
GATCGACGTTGCTAAGTGTGTTGATCGAGTATGGCGCAGATATCAACGCTCAGGATCGAT  
GGAAGAACACGCCTCTAGCAGATGCAGAAGGAGCCAAGAAGCATAGCATGATTGAGT  
TGTTAAAGTCCATGGTGGCTTGTCTTATGGCCAAAATGGAAGTCATTTTGAACCTAAG  
CCTGTTCCACCCCACTGCCAATAAGTGTGACTGGGAAATTGAACCTTCGAGCTGG  
ATTTCTCAAACCTCAGCCATCATTGGAAAGGGCTCTTTTGGTGAGATCTTAAAAGCGCAT  
TGGCGTGGAAACACCAGTAGCTGTCAAACGCATCCTTCCATCTCTTTCAGATGATAGATT  
GGTTATTCAGGATTCAGGCATGAAGTAAATTTACTAGTGAAGCTTCGTCATCCTAACAT  
AGTTCAATTTCTAGGAGCTGTAAGTACAAGAAGCCACTTATGCTAATCACAGAATATT  
TACGAGGGGGTGATCTTCATCAGTACCTCAAGGAAAAGGGTTCACCTTAGTCCTTCAAC  
AGCTGTCAATTTTGCCTTGGACATTGCTAGAGGCATGGCTTACCTTCACAATGAGCCAA  
ATGTGATAATTCACCGAGACCTTAAGCCAAGGAATGTTCTTTTGGTCAATTCCAGTGCA  
GACCATTTAAAAGTAGGAGATTTTGGGCTGAGCAAGCTTATCAAAGTTCAGAATTCTCA  
TGATGTGTACAAAATGACCGGCGAGACTGGAAGTTACCGGTATATGGCTCCTGAAGTTT  
TTAAGCACCGGAAATATGATAAGAAGTTGATGTGTTCTCCTTTGCAATGATACTTTATG  
AGATGCTTGAAGGGGATCCTCCACTTTCAACTTATGAGCCTTACGAGGCAGCGAAATAT  
GTGGCAGAAGGACATAGGCCTTTTTTCCGCTCCAAAGGATTAATCACTGAGCTGAAGG  
AGTTAACAGAGCAGTGTGGGCTACTGACATGAACCAAAGACCTTCTTTCTTGGAAT  
TCTCAAAGGCTTGAGAAGATAAAGGAAAATCTGCCTTCAGATCATCATTGGAACATAT  
TTAATGCATAA

**>LOC107429056(MAPKKK40)**

ATGAAGAGATCAAGAGAAGAAGAAGACAAGGGCAACCTTCTTCATCTTCCTCATA  
CTAAGAGAATAAGAGAAGAGCACAGTCTTAGCTCCAAAGGCTGTTTCATGGGTGAGAG  
GTTCAATGATTGGCAAAGGTGGTTTTGGGCTGTGTTTCTGGCTTTCAACAACAAACCC  
ACTTCAAGCTTCAAAGATTTCCACCTGTTATGGCTGTGAAATCGGTGGAGGCCACTTC  
TTGCTCTGAGCTTGTTAAGGAGAAGATTCTTCTGCAGATTGTCAAGGATTCTCCGTTCA  
TCATCCGATTTTATGGCGAAGATGTTACAGTGGGTACAAGGGTAAAATAATTATCAACT  
TGTTCTTGGAGTATGCTTCTGGAGGTTCACTGATGGATTGATTGAAAAATCCAAAGCA  
TCCGAAGGAGTTGGGTTGGTTGAATCTCAAGTAAAAAAGATTACCGAATCAATTCTTA  
AAGGGATTAACGCATTCATGAAGCTGGTTATGTGCATTGTGATTTGAAGCCGCAGAAC  
ATTTTACTTGTCCCCAAGAAAACCTCTACCCTCTTTTGTGGCCAAGATTGCAGA  
TTTTGGCCTTGCAAAGGCAGCTCAAGGGCTTACCAGGAGTTCCGAAGTGAAAGGAAC  
TCTCATGTACTTACCGCCTGAAGCAGTGAACCTTTGGTATCCAAGACCAACCTCTGACG  
TTTGGGCTCTTGGTTGTATTGTGCTATGTATGTTGACTGGAAAAATTTATCCATGGGATT  
TGAAATCTTGGGAAGGAAATCGCGAGCTTAAGCAGAAGATTTTCAGAGGATTGTCCTGA  
AATCCAAATGGGTTATCTAAAAGGCTGAGGATTTCTTGGAGCAATGCTTTATGAGGA  
GTCCATATGATAGCCCACTGCTGATATGTTGCTGAGCCATCCATTTATTTGTTCTGGATT  
GGGCAAAGGAGATGATGAAGATAAAGAAGAGCTAATGTCTGTCCATTCAGTACAGGCT

TCATCTTGCAAATTGTCTGAGCCTCGTGATGAATTCAGAGCTAGCTTTATACCTCTTCTA  
AACTCAAGCTTTGGAGAAACAGAGGAGGTTCAAGGGAAGATAACACCTGTAATCTCA  
GACAGGCTATCAAGTTCTGCCGTCTGTAGTGCGGCATAG

**>LOC107430036(MAPKKK41)**

ATGCGCATTGCGCACCCCTTCCTCCGGCAAGCCACCGGCGATGGCGAGAGCCGACGAG  
AAGTCAACCGGTGCGTATTTACAGAGCATTAGAGGATCGATGCGAGAGCTTGGAGAAGA  
GCCACGAGAGACTCAAAGAGCAGCTCGATAAGTTGGTGAACGAGAAGAAGAAGGAA  
GAGGTGGCGGTGATGATGGAGTCAGATTCAGTCGGAGTGTCGTCGGAGTATCCATTC  
CGGTACGTATTCGGGGATGCTTCGTGTCGGGAAGTCCGTACAGAAGCATTGGAATCT  
TTGGGTCACGCCGTTTCATGTTTGCGAAGCTTCCACGGGAGAAATCATATACTGGAATCG  
CTCTGCTGAGAACCTCTATGGGTGGAAGAACTATGAAGTTGTTGGACATGGGGTTGGT  
GGTGAAATCCTTATCCCTGAAGAACATTTTCGTAGCTCTACAGAAAATCATTGAAAGGTT  
GAGAAGAGGGCAGTCATGGTCAGGTCAGTTCCTTTTAAGAAGAGGTCCGGTGAAATA  
TTCATGGCTATAGCGACCAAAAAGCCATTATATGAGAATGGCGTGCTTGTGGTTTTATC  
ACTGTTGCCAATGATGCAGCAGCTTTTAATAGAATGGAAGCACGAAACAGGACACATG  
AAGATAGTGCCAAATCCCAACATAGAGGATCGCAGTCATACTTGAAAAGGATTCAGTG  
GCATGGACACCCACCTATTGCACCAGTTCAGAGATAGCTTCATCTGTTTCCAATCTGG  
CCTCAAAAATTTTTTTCGCGGGACATGGAGATGATGCATGTAACATATCCAAGGACAGA  
GAGGATTCTGTAACAGACACCAAAGATGCCAATGCCAAGAAAACCTGGTATCCAAGCAG  
CAAATTCCTGGCAAAGCTGCATATCAAGGGAACCGACAATAGTGGAAGAAAGATGA  
TGGAACAACCTGTACAAAATGGTTCAAGTGAGACTTTGTCTATGAGCAATGAGCCTAATT  
CTAAAAGCGATTCAAAAAAACC AACTTCATGTGGCTACATAGTTGATACAGATTATAAA  
GGAGATGGACACCACAGAAAATCAAGATATCTCTAGCAGCTAAGCGATATGCACGTG  
GGCATGAAATACCAAATTC AACTGAAGATGGTTCTGTTCTAGCCTCTTCAAGGGAGTGC  
AAGGAGTGTTTGACAGGATTAGAGTGTGATGAGAATTC AAGGAAGCAGAACCAGAA  
GTAGCCAACTTGAATGCAGTTCAGATAGAAGATGGCAAACAATTC AAGTTTAGGGG  
GAAGCACTGACAGCAATGGAAGTTCATCAAGCAAAGGGGATAATGAATCTAACCCAT  
AGTAGATTGTGAGATTC ACTGGGAGGACCTGCATTTAAGGGAGGAGATTGGACAGGGT  
TCTTGTGCCATTGTTTATCACGGAATTTGGAATGGATCGGATGTTGCTATCAAGGTGTAC  
CATGGGAATCAATATACTGAGGGAATTCACAAGACTACAAAAGGAGATTGATATAAT  
GAAGAGATTGAGACATCCAAATGTATTGTTGTTTATGGGAGCAGCATATTCACAAGAAC  
GACTAGCCATTGTCACAGAGTTC TACCAGGGGAAGCCTTTTTAGAACACTTCACAA  
GAACAATCAGGCACTTGATATCAGACGGCGTCTGAGGATGGCTCTTGATGTTGCTAGA  
GGTATGAATTATTTGCATCACAGAAATCCACCTATAGTGCATAGAGATCTTAAATCGTCT  
AACCTGCTTGTGACAAGAATTGGAGTGTCAAGGTTGGAGACTTTGGCCTGTCAAAGT  
TGAAGAATGGGACCTTCTTGACAGGAAAATCTGCGAGAGGGACGCCTCAGTGGATGG  
CCCCTGAAGTCCTTCGCAATGAACCTTCAAATGAAAATCCGATGTTTTAGCTTTGGT  
GTGATTCTCTGGGAACTAATGACTGAATCCATTCATGGAATCACTTAAATTC TTTACAG  
GTTGTTGGAGTTGTAGGCTTCATGGATAGAAGATTAGACCTGCCAGAAGGCCTTGATCC  
CCACGTAGCATCAGTCATCCAAGACTGTTGGCAAAGTGACCCACAACAACGTCCATCT  
TTTGAAGACATAATCCAAAGAATGATGATACTTCAAAGAGCTGCACCATTGCCTACTCG  
GAAAAGCTCAGAACCTTAG

**>LOC107431473(MAPKKK42)**

ATGGCAATCGAAGAAGAAGTGGAGAGCTGTGGCAGCAGAGCCGTGAGTTCATCGCAG



GGGCAGACTCGGCATCACAGACAGAACTTGATGTGTATAACGAGGTTCTTCATCGAA  
TCCAAGAATCGAATTTTGAAGAGGCTAGTCTTCCTGGTTTTGATGATCAGCTTTGGCTC  
CATTTCAATCGCCTTCCTGCCAGATACGCATTGGATGTAAACGTGGAGAGGGCAGAAG  
ATGTGCTTACACATAAGAGATTGCTGCAATTAGCTAAAGACCATGCCGATCGACCTGCT  
ATTGAAGTTCGAATCGTGCAGGTATATCCTGTTGATTCTGATTCTTCAATGAAAGAAGAT  
GCACAGAGTTCTTTAATAATTCAGGCGGACAGGGGATACATCCACCACCTACCTTTGG  
TTCATCGCCTAATCTTGAAGCACTTGCACCTCAATCAAACAGATATCTTGTGAAGATG  
GGGATAGTGCTATGAGCGAGACACCTTACTTTCCTAGGCCTATGCATGAGATTACCTTTT  
CAACAGCTGACAAGCCTAAACTCCTTAGTCAGTTAACTTCATTACTTTCTGAGATTGGA  
TTAAACATTCAAGAAGCTCATGCTTTTTCAACTGTCGATGGATTCTCTCTGGATGTTTTT  
GTTGTTGATGGTTGGCGTTGTGAGGAACTGAGGAGCTTAGAGGTGCTTTGGAAAGGG  
AAATATCAAAATATAAGGAGCAATCTTCTTCAAAACAGAATCCAGGTGCTGTTGATATT  
GATATTGGAAATGAACAAGCAAAATTGGAGCCCTTATGTAATGTTTTAGAAATACCGAC  
TGATGGAATCGATGTATGGGAAATAGATTCCAGTCTGCTGAAATTTGAGAATAAACTTG  
GATCTGGGTCATATGGTGTATGTGTATAAAGGATCATATTGTAGTCAGGAAGTTGCTGTCA  
AAGTCTCAAACCTGAGCGTGTCACTGCAGAGATGCTGGGAGAGTTTTACAGGAAG  
TTTACATAATGAGGAAAATTCGGCATAAGAATGTTGTGCAATTTCTTGGTGCATGCACT  
CAACATCCAAATCTGTGCATTGTGACTGAGTTTATGTCCAGAGGAAGCCTATATGACTT  
TTTGCATAAGCAAAAGGGCGTATTTAATCTTGCTTCTCTACTTAAAGTAGCAATTGATAT  
TTCTAAGGGGATGAACTATTTGCATCAGAATAACATAATCCACAGGGACCTCAAGACTG  
CCAATCTTCTGATGGATGAAAATGAGGTTGTTAAGGTTGCTGATTTTGGGGTTGCCAGA  
GTCCAAGCTCAGTCCGGAGTTATGACAGCTGAAACTGGAACATACCGCTGGATGGCAC  
CTGAGGTAATTGAACATAAACCATATGATCACAAGACAGATGTTTTAGTTTCGGTATA  
GTTCTTTGGGAGCTTCTAACTGGAGAACTTCCATATTCATTGTTGACTCCAGTACAAGC  
AGCAGTTGGTGTGGTACAAAAGGGTCTACGACCTACAATACCTAAGAACACTCATCCA  
AGGGTTGCAGAACTACTTGACAGATGTTGGCAGCAAGACCCAACTCGGAGACCTAAC  
TTCTCTGAAATTATAGAGATCCTAAAGCATATAGCGAAGGAGGGGAATGATAACAAGA  
CCGGAACAAGGACAGATCTGCAGGCAGGATTTTTTCTGCACTGAAATGGGTCAATCAC  
TGA

**>LOC107432147(MAPKKK43)**

ATGGAATGCCCGGTAGGAGATCGAACTACACGCTTCTGAGCCAAGTTCCTGACGACC  
AGTTCGGCGGTGGGTCCGCCGATGGCTGGAACCGGAGCTACGACTTCTTATTATGAA  
TCGGTATCGGGTGAGGGTAAGAACAACAAGGGGAAGGTGGAGAGAGGGTTCGATTGG  
GACGCCGTTGGTGTACAGGGCGAACCAGCAAGGGAATCGGATGTTCTCGTCGATCG  
GGTTGCAGAGGCAGTCAAGTGGGAGCAGTTTCGGTGAGAGCTCGCTCTCAGGTGAGT  
ACTACGCGCCGACGTTATCGACCACGGCGGCAATGATATGGATGCCTATGGGTATTTG  
CACGAGGATGTATTCAAGATTGGCGGTGGCGGAGGGGATTTGAGAGCCAAGGGGGTT  
GATGGGGCTGTTGGGACGGGAGGTTTCGTCTGGGGGAAGAGCTGGGCTCAGCAGACG  
GAGGAGAGTTATCAGTTACAGTTGGCTTTGGCACTTCGACTTTCATCCGAGGCAACCT  
GTGCTGATGATCCCAATTTCTTGGATCCAGTGCCCGATGAATCCGCGTTAAGGTCGTCA  
TCGTCGAGCTCGGCCGAGGCCGTTTCTCATCGATTCTGGGTAAATGGCTGCCTCTCATA  
CTTTGACAAAGTTCCTGACGGCTTTTACCTAATTCATGGAATGAACCCATATATATGGAC  
TGTGTGCACTGATCTGCAAGAGAATGGTCGTATAACCATCACTTGAATCACTAAAGTCTG  
TTGACCCTAGTATTGAATCCTCAATTGAAGCAATCTGGTTGATCGACGTAGTGATCCC

AGCTTAAAGGAGCTTCAGAATAGGGTCCATGGCATTCTAGTGGCTGCATTAACACAAA  
AGAGGTTGTAGATCAGCTGGCAAAGCTTGTGTGTAACCGCATGGGGGGTTCAGCTACC  
ATTGGAGAAGATGACTTTGTTTCCTTATGGAGGGAGAGTAGTGATGATCTGAAAGAATG  
CTTAGGATCTGTAGTTGTTCCATTAGGCAGTCTATCCATTGGCCTATGCAGACATCGTGC  
TTTGTATTCAAAGTGCTAGCTGATAACAATTGATTTGCCATGTCGAATTGCAAAGGGCT  
GTAAATATTGTA TAGATATGATGCATCCTCTTGCCTTGTCCGGTTTGGGATTGATAGGG  
AGTATTTAGTTGATTTGATTGGGAAGCCAGGTTGCTTATGCGAGCCCCGATTTCATTGCTCA  
ATGGTCCATCATCCATCTTAATTTCTTACCAGTGCAGTTTCCAAGATTAACACCAGTTG  
AACCTATCATTGATTTCAAGTCACTGGCCAAACAATATTTCTCAGATTGTCAATCACTTA  
ATCTTGTGTTGATGAAGCTTCAACAGGTCAAAGTGATGATTCTTCTTATTGGTAAA  
GTTTCTCATCCAGGTGCTAAAGATAGAGATTCCCAACTGTTTAAAACATGTAATCCTGC  
TCAAACATCTTACACTCAACAACCATGGCCAAAGATCCAGCTATCGGGCGTAGAGAG  
GCTATGAGGGTGGATTCTTCCAAGAGCTCAAGGTTATTCGAGGGAAGTCAACTGATT  
CTAGTAAGCCAACTAAAGAGTTTACCCTTGATATAGAAGATTTAAACATTCCATGGTGT  
GATCTTGTATTAAGAGCGAATTGGAGCAGGTTCTTTTGGAACTGTCCATCGGGCTGA  
TTGGCATGGCTCAGATGTTGCAGTGAAGATTCTTATGGAACAAGACTTTCATGCAGAAC  
GCTTCAAAGAATTTTGGAGGGAGGTTGCAATAATGAAACGCCTACGACATCCAAATATT  
GTTCTCTCATGGGTGCAGTCACAGAGCCACCAAAGTTGTCCATTGTCACAGAGTATTT  
ATCAAGAGGTAGCTTGTATAGGCTTTTGCATAAAAGCGGTGCAAGGGAGATGTTGGAT  
GAAAGGCGTCGCTTGAGTATGGCTTATGATGTGGCAAAGGGAATGAATTACCTTCATAG  
AAGGAATCCCCAATTGTTTCATCGAGATTTAAAATCTCCAAATCTTCTGGTTGACAAAA  
AGTATACAGTTAAGGTTTGCATTTTGGACTCTCTCGTTTAAAGGCGAACACATTTCTAT  
CATCGAAGTCAGCTGCTGGGACTCCTGAGTGGATGGCACCAGAAGTTCTTCGTGATGA  
GCCCTCAAATGAGAAGTCAGATGTTTACAGCTTTGGTGTAACTGTGGGAACTTGCCA  
CATTGCAACAGCCATGGAGTAACCTAAATCCAGCGCAGGTTGTGGCAGCTGTTGGCTT  
TAAGGGGAAAAGACCTGAGATTCCACGTGACTTGAATTCTCATGTTGCTTCTATAATTG  
AAGCATGCTGGGCAAATGAACCCTGGAAACGGCCCTCATTTGCCAGTATCATGGAATC  
TTAAAGGCCATTGATTAAAGCACCCACAGCTCAACCTGGTCGTCCAGACATGTAA

**>LOC107409320 (MAPKKK44)**

ATGGAGTGGACCAGAGGTTCCATGATTGGCCGTGGCTCTACTGCTACAGTCTCAGTCG  
CCATGGATGTCCCATCTGGCGAGCTCTTTGCTGTAAAATCCACTGAGCTTCTCATTCC  
AAGCTCTTGCAAAAAGAACAAAATTTGCTTTCCAAACTGAGTTCTCCATTTATAGTCAA  
GTACAGGGGATTTGATATCAGAAATGAATGTAACCAGCCTATTTACAATCTTTTCATGGA  
GTACATAACCACAAGGGACTCTCTACGATGATATTCAGAGGCATGGAGGTCGCTTGAA  
GAGTCTTTGATTAGA ACTTACACGCGGCAGATTCTTCAAGGTTTGGAAATACCTTCATGG  
AAATGGGTTGGTCCATTGTGATATAAGAGCCAGAACATCTTGATGGGGAAAAAGAAT  
GTCAAGATTGCTGATCTGGGTTGTGCTAGATTGGTGGAAAGAGTTCCCGGAAATGGAG  
ATTTTGGCACGGTGACGTTTGTCCGTACACCGGTGTTTCATGGCGCCGGAGGTTTGTGCT  
GGGGAAGAACAGGGATTTGAAGCTGACTTATGGGCTCTTGGATGCACAATCATTGAGA  
TGGCCACGGGTAAAAGTCCATGGTTGGATGTAGATAACCTTGTATCGGCTCTTCATAGG  
ATCGGATTTTCCGATGATGTGCCGGAGTTTCCGAGCTGGTTGTCTAAGAAAGCTAAGGA  
CTTCTGGGCATGTGCTTGAGCAGGGAACCAAACAGAGGATGACAGCTAGAGAGCT  
TCTTGAGCATCCATTTCTCGAAGAGAAAGATTCTCAATCAGATCAAGTAGTGAATGAGT  
TCTTTATGAATTCTCCAAACAGTGTGTTGGAAAGCCTTTGGGATTCATTTGAAGTCAAT

GGGAGTCCACAGAATCCAAACCATAAAGGTTCTTCTTCGGATTCTGAATTCTGAATTCTGC  
AGCTGCAAGAATAGAGGAGTTGATTGATGGAGCTACCATGGATCCCTCAGTTTCAAATG  
AAGCCAATTGGACTTGGAGTGAAGATTGGATCGAAGTTAGAAGCAACAATGATGAGGC  
AAACAATGAGTTTTCTGATAAGATGGAAGTGGTATTGCCTACTAATGAACCACCATTAG  
CATGTTTCATTGCCTGATTGTTCAAGTATCAATATTGAAGAAGAGCTTGGTAGATTAGGGT  
TTGATGAAGATTTCTTGTTTAAATTCTCATTGGACATGTCAAATTTGTTAGAACTGAAA  
GAGGATTTGTGATTACATTTGAGATTACAGAAAACACTATTGTATTTAGAAAACAAAAT  
TTTATGACGCAGGAAATGAAATTTTTTCTTTTCTTCAATAT

**>LOC107408109 (MAPKKK45)**

ATGGAATAATAACGGCGCAGTTGAAGCGGGGAATCTCGCGGCAGTTCTCGACGGGGT  
CGCTGCGCCGAATCTGAGCAGGCAGTTCACGCGGCAGTCGTCGCTGGACCCGCGGC  
GTCACAACCTCAGGTTCACTTCGGCAGGCAGTCTTCGCTCGATCCCATTCGCCGGAG  
CCCCTCCGATGATGCCGACCTCACCGTCCCTGAGAACCTTGACTCCACCATGCAGCTTC  
TCTTCATGGCCTGCCGAGGAGATACTCTTGGCGTCCAGGATTTGCTCGATGATGGTACC  
GATGTTAATAGCATCGATTTGGATGGTCGCACTGCTCTCCATATCGCTGCCTGTGAAGGC  
CACGTTGACGTCGTCAAGCTCTTGCTCAGCCGCAAGGCCAATATTGATGCTCGTGATCG  
CTGGGGCAGTACGGCAGCTGCTGATGCTAAGTACTATGGACATACAGAAGTTTACAACA  
TTTTGAAGGCTCGTGGAGCTAAAGCTCCGAAAACCAGGAAGACGCCAATGGCAGTTG  
CAAATCCTCGAGAAGTTCCAGAGTATGAGCTTAATCCGCTAGAGCTTCACATAAGGAA  
GAGTGATGGTATTGCAAAGGGAACATATCAAGTGGCTAAATGGAATGGTACAAAGGTT  
GCTGTAAAGATACTAGATAAGGACAGCTACTCGGACTCTGAAAGCATAAACGCATTCA  
AACATGAGTTAACCTTGTTAGAAAAGGTCCGCCATCCTAATGTTGTTCAAGTTTGTGGA  
GCTGTGACACAAAATATGCCTATGATGATTTTCAGAATATCATCCAAAAGGTGACTT  
GCGAAGCTATCTTCAGAAGAAGGGACGGCTATCTCCATCTAAAGCCCTTAGATTTGCTC  
TTGACATTGCCAGGGGCATGAATTATCTTCATGAATGTAAACCAGACCCAATTATTCACT  
GTGACTTAAAGCCAAAAAATATTTTGCTGGATAGTGGAGGTCAATTAAGGTAGCCGG  
GTTTGGTGTAATAAGGTTGTCAAATTTTACCTGACAAAGCAAACACTAGCGCAGGGT  
GGTGGTAACATTGACCCTTCAAATATATATGTGGCACCTGAGATTTATAGAGGTGAAATA  
TTTGACAGAAGTGTGGATGCGTATCTTTTGGTCTCATTTTATATGAGATGATTGAGGGC  
GCACTGCTATCCCAACCAAGCCTCCAGAAGAGACTTTGAGAATGTTGTGCATAGACG  
GACAAAGACCACCATTCAGAGCAAATCAAAAAGTTATCCTCCAGATGTAAAAGAGTT  
GATTGAGGAATGTTGGGATCCTGAGCCTGTAGTTAGGCCAACTTTTTTCAGAGGTCGTTG  
TACGGTTGGACAAGATAGTTTCAAATTTGCTCAAAGCAGGGATGGTGGAAAGACACTTT  
TAAGCTTCCTTGGAATAG

**>LOC107405634 (MAPKKK46)**

ATGGAATTGGAGGTAAAGCCACAAGAGCAACCACATCCTCAGGCTGGGGTGGCTAGAT  
TCACTCTAGGCAAGCAGTCGTCGCTGGCACCCGACCGGAGTACAGATTCCGCCGGAAC  
GGCGGTGGATGAGGTGATCGATCCGCGGGTGAAGCTGATGTACTTGGCCAATGAAGGT  
GACTTGGAAGGGATTAAGAGCTCTTGGACTCCGGCACCAATGTCAATTTCAAGTACAC  
TCGATGGCCGTACAGCTTTGCATATCGCCGCTTGCCAGGGACTATCCGACGTCGTTTCA  
CTCTTGCTCCATCGAGGCGCAAGGTGATCCTCAAGATCGCTGGGGAAGCACGCCTC  
TTGCAGATGCAGTGATTACAAAACCATGACGTGATCAAATTTTAGAGAAACATGGT  
GCAAAGCCTCCGATGGCTCCCATGCATGTTGAAAATGCACGTGAAGTCCCAGAATATG  
AGATCAGTCCAAGTGAACCTGATTTTTCTAATAGTGTGACATAACAAAGGGAACCTTC

CGCATAGCATCTTGGCGTGGAATTCAAGTTGCAGTTAAAACACTAGAGGAAGAATTATT  
CACTGATGAGGATAAAGTAAAGGCATTACAGATGAGCTTGCATTGCTTCAGAAGATA  
CGCCATCCAAATGTTGTCCAATTTTTGGGTGCTGTGCACACAAAGCAGTCCGATGATGAT  
TGTCACAGAATATCTACCCAAGGGAGACCTCTATGCATATTTAAAAAGAAAAGGTGCTC  
TAAAGCCAGCAACAGCGGTGAAGTTTGCTCTTGACATTGCTAGGGGCATGAATTATTTA  
CATGAGCATAAACCTGAAGCAATTATTCATCGAGATCTTGAGCCTTCAAATATATTGCGG  
GATGATTCTGGGCATCTGAAAGTTGCAGACTTCGGGGTGAGCAAACACTACTGAAAGTTG  
CAAATACAGTTAAAGAAGACAGACCTGTCACTTGTCAAGACACTTCTTGCGGATATGT  
GGCTCCTGAGGTTTACAGAAATGAAGAATATGATACTAAAGTTGATGTGTTTTCATTTG  
CTTTGATCTTGCAAGAGATGATTGAAGGTTGTCCACCATTTTCCACAAAGCCAGAAAA  
AGAAGTTCCTAAAGCATATGTTGCAAATGAGCGCCACCATTAGAGCTCCACCAAAGT  
ACTATGTGTATGGGTTGAAAGAGTAA

**>LOC107407393(MAPKKK47)**

ATGAGTTGCAGTGAGAGGTACAGAGGAGGTGAAGAGAGGGGAATATGAGCACCAGGCT  
TTGCGGAGGTCTGTTGATGAAGCTGAACCCAATTTGGTATCCCAAATGGTTCCTAAC  
GACCCAACAATTGACGATCGATGAGAACTTGCTGGTTCGACCCGAAAGTTCTGTTTATT  
GGGTCCAAAATTTGGTGAAGGAGCTCATGGCAAAGTCTATGAAGGAAGGTATTGTAATC  
GGATTGTTGCTGTTAAAGTTCTCCATCGTGGAAGCACTTCGGAAGAAAGAGCTTCGCT  
GGAGAATCGATTTGCTCGTGAAGTTAACATGATGTCTCGAGTTAACATGAGAACCTTG  
TTAAGTTTATTGGAGCTTGTAAGATCCTTTAATGGTGATAGTTACTGAACTATTACCTG  
GGATGTCACCTCCGGAAGTATCTAGTTAGTCTTCGTCCTGAAAAATTAGATCTTCACGTG  
GCGATAAAATATGCCATTGACATTGCTCGTGCCATGGAATGTCTGCATGCCAATGGGATT  
ATACACAGAGATCTGAAACCTGACAATTTGTTGCTTACGGCAAATCAAAGTCTGTAA  
GCTTGCAGATTTTGGTCTGGCAAGAGAAGAATCTGTGACTGAAATGATGACTGCAGAA  
ACTGGTACTTATCGGTGGATGGCTCCTGAGTTGTACAGCACTGTGACATTGCGTCAAGG  
AGAGAAGAAGCATTATAATAACAAGGTTGATGTATACAGTTTTGGAATTGTCTTATGGG  
AACTATTGACAAACCGCATGCCATTTGAAGGCATGTCCAACCTGCAAGCTGCTTATGCT  
GCTGCTTTCAAGCAAGAGAGGCCTAGTCTTCCAGAGGATATATCCCTGATCTTGCAATT  
TATCATAACAGTCATGTTGGGTTGAGGACCCTAACTTGAGGCCAGCTTCAGCCAGATAG  
TCCGCATGCTCAATTCATTTCTCTTACACTTTCACCATCACAATCATCCTTACCGGATT  
CCGACGATGTTAACGAGGCAGCAGCTAGTAATGTTTCTATGAATGACTTATCTGCTCGA  
ACAAGAGGAAAGTTTGCTTTTATTCGTCACCTTTTCGCTGCTAAGAGGACAAAGAACT  
TGCAATGA

**>LOC107406964(MAPKKK48)**

ATGGTTTTTGTGTTTGCATCTGGTTTTGCTGCAGTTATCTCACTCCATTAGTTTTT  
GGTCTATTGGCTTACTTTTCAGATACAAAAACCAGACTGTTGCAGTTAAAATTGTTTAC  
AATGGAGAAACTCCAGAGGAGATCGCCAAGAGGGAAGCACGGTTTTGCAAGAGAGGTT  
GCAATGTTGTCTAGAGTTCAACATAAAAACTTAGTGAAGTTCATTGGTGCTTGTAAGGA  
ACCGGTCATGGTGATAGTTACTGAGCTTTTATTGGGAGGGACATTGCGTAAATACTTATT  
GAACACGCGACCAAGGTGCTTGACACACGAGTTGCTGTTGGTTTTGCACTTGATATT  
GCTCGTGCCATGGAGTGCCTACACTCTCATGGGATTATACACCGCGATTTGAAACCTGA  
GAACTTACTCTTGACTGCAGACCACAAAACAGTTAAACTAGCAGATTTTGGTTTAGCA  
AGAGAAGAGTCTTTGACAGAGATGATGACTGCTGAAACAGGGACATATCGTTGGATGG  
CTCCAGAGTTGTACAGTACTGTTACTTTGAGGCAGGGAGAGAAGAAGCATTACAACCA

TAAAGTGGATGCCTATAGCTTTGCAATTGTTTTGTGGGAGCTCTTACACAACAAATTAC  
CTTTTGAAGGCATGTCAAATCTCCAGGCAGCGTATGCGGCTGCTTTTAAGAATGTTAGG  
CCCAGTGCTGAAAACCTCCCAGAGGAAGTGGCTCTTATTCTAACTTCTTGCTGGCAGG  
AGGACCCAAATGCTCGGCCTAATTCAGCCAAATAATCCAAATGCTACTTAATTACCTTT  
ACACCATCTCTCCTCCTGAACCCGTGATTCTTCTCGGATTTTTGCTTCTGAGAACT  
GTCTTGCCACCGGAGTCTCCTGGTACAAGCTCATTGATGGCAGTGCAGATGATTCAG  
AGGAGACACCAAAGCAAAGATGGAAAACAAGTCGAGAGGACTTTTCTTCTGCTTCA  
ACCAGTGTTATTAA

**>LOC107404883(MAPKKK49)**

ATGAAAACCTTCAAGTATCCATCTTACCACCTTCCAAGAGAATGAGGGGAGCAGAAA  
CAATAGATTCAGAAGGTCCGTACAGGCTGCTATACTGTTCAAGTAAGGGAGACACAGA  
AGGGGTAGTGCAGGAATTAGAGAAAGGTGTGATTTCTAATCTGGCTGATTATGATAAAA  
GAACTGCTCTCCATCTGGCATCGTGTGAAGGTTGTACGGAGGTTGTTGTTCTACTTCTA  
GAGAAAGGTGCAGATGTCAATCCATTGATCGTTGGGGCGAACTCCACTGTCAGATG  
CTCGTAGCTTTGGTCATGAAAGCATCTGCAAGATATTGGAGGCTAATGGTGGAATTGAT  
CCGGTGGGGCTTGACTCCCAGATTCATGCTATACTATTGATTATTCTGAGGTGAACATG  
AATGACGCAATACTTATTGGAGAGGGGTCATATGGTGAAATATATTTGGTGAAATGGAG  
AGGTACAGAAGTTGCTGCAAAGACGATTTCGCTCCTCTATTGCATCAAATCAAAGGGTC  
AAGAATTCCTTTATGAAAGAACTTGCTTTGTGGCAAAAAGTTGCGCCACCCCAATATAGT  
TCAGTTCCTTGGTGTCTAAACAATTGTAGCCGATTGATCTTCCTTACCGAGTATCTTTG  
CAATGGAAGTTTGCATGACATATTAAGAAAGAAAGGAAGACTTGATCCTCAAACCTGCA  
GTTGCTTATGCTCTTGATATTGCCAGAGGTATGAATTATCTCCATCAGCATAAATCACATG  
CTATAATTCACAGAGATTTGACCCCAAGGAATGTGTTACAAGATGCAGCTGGCCGACTC  
AAGGTTACTGATTTTGGATTGAGCAAAATTGCACAGGAAAAAGATGTTTTAGGTTATAA  
AATGACTGGAACAACCTGGTTCCTTTTCGATACATGGCACCGGAGGTATATCGCCGTGAAT  
CTTATGGGAAAGGTGTTGATGTCTTCTCCTTTGCTCTAATCGTACACGAGATGTTTCAA  
GGAGGACCATCAAATCTGGCAGATGATCCAGAACAAGTAGCAGATAAACGAGCATATG  
AAGATTCCAGACCGCCTCTCTCCTCTTATGTATAACCCTGAACCAATTAGGATACTTCTTC  
AAAAATGCTGGCACAAGAATCCGGATTTAGACCTACATTTGAAGATATAATTTTAGAG  
CTTGAGTCTATTCAAGACAAGTTTCAGACTACCGAACCAATGCCTTCAAGTTGCAGGT  
GTTCCATCCTATGA

**>LOC107406505(MAPKKK50)**

ATGGGAAAAATGGAATCTGGGAGTAGATTTTTCTCAGCTGATGAGTTCAGATTAGATGC  
AAAATGGCTGATTGATCCAAAACATCTCTTTGTTGGACCAAGGATTGGAGAGGGAGCC  
CATGCTAAAGTGTACGAGGGCAAATACAAAACCAGACTGTTGCAGTTAAAATTGTTTC  
ACAATGGAGAACTCCAGAGGAGATCGCCAAGAGGGGAAGCACGGTTTGCAAGAGAG  
GTTGCAATGTTGTCTAGAGTTCAACATAAAAACCTTAGTGAAGTTCATTGGTGCTTGTA  
GGAACCGGTCATGGTGATAGTTACTGAGCTTTTATTGGGAGGGACATTGCGTAAATACT  
TATTGAACACGCGACCAAGGTGCTTGGACACACGAGTTGCTGTTGGTTTTGCACTTGAT  
ATTGCTCGTGCCATGGAGTGCCTACACTCTCATGGGATTATACACCGCGATTTGAAACC  
TGAGAACTTACTCTTGACTGCAGACCACAAAACAGTTAAACTAGCAGATTTTGGTTTA  
GCAAGAGAAGAGTCTTTGACAGAGATGATGACTGCTGAAACAGGGACATATCGTTGGA  
TGGCTCCAGAGTTGTACAGTACTGTTACTTTGAGGCAGGGAGAGAAGAAGCATTACAA  
CCATAAAGTGGATGCCTATAGCTTTGCAATTGTTTTGTGGGAGCTCTTACACAACAAATT

ACCTTTTGAAGGCATGTCAAATCTCCAGGCAGCGTATGCGGCTGCTTTTAAGAATGTTA  
GGCCCAGTGCTGAAAACCTCCCAGAGGAAGTGGCTCTTATTCTAACTTCTTGCTGGCA  
GGAGGACCCAAATGCTCGGCCATAATTCAGCCAAATAATCCAAATGCTACTTAATTACC  
TTTACACCATCTCTCCTCCTGAACCCGTGATTCTTCTCGGATTTTTGCTTCTGAGAACA  
CTGTCTTGCCACCGGAGTCTCCTGGTACAAGCTCATTGATGGCAGTGCGAGATGATTCA  
GAGGAGACACCAAAAGCAAAGATGGAAAACAAGTCGAGAGGACTTTTCTTCTGCTTC  
AACCAGTGTTATTAA

**>LOC107405705(MAPKKK51)**

ATGAAGGAAGGCAGTGATGGGTTTGTGAGAGCGGATCAGATTGATCTGAAAAGCTTAG  
ATGAACAGCTTGAGAGGCATATGAGCAGGGCTTTGACCATGGAGAAAAGCAAGAAGC  
TGAGAGATGAACAAGGTAATACCAACAATTTTCTTACTAGTACTGCTTCTACCACCACC  
ACCACCACCACCATGTCTTTTCTAACCCCAAGAAGCAGAGGCAAGAATGGGAAATCG  
ATCCCTCCAAGCTCATCATCAAGGGCGTCATTGCACGTGGCACCTTCGCCACCGTCCAC  
CGTGGCGTCTACGACGGTCAGGATGTTGCCGTGAAATTGCTAGACTGGGGTGAAGAGG  
GTCACAGGGCAGAAGCTGAGGTTGCTTCACTAAGGGCAGCTTTTACACAAGAAGTTG  
CTGTCTGGCATAAACTTGATCATCCGAATGTTACTAAGTTTATAGGAGCAAAAATGGGC  
TCGGCAGAACTACAAATTCAGACTGATAATGGTCTAATTGGCATGCCTAGTAATATCTGT  
TGTGTTGTTGTGGAATATCTGGCTGGGGGTACTCTGAAATCTTACCTTATAAGGAATATG  
AGAAAGAAGTTAGCTTTTAAGATTGTTGTCCAGCTGGGTCTGGATCTTGCTAGAGGTTT  
GAGTTACCTTCACTCGCAGAAGATTGTTACAGAGATGTAAAACGGGAGAACATGTTA  
TTGGACAAGACACGTACAGTAAAATGCCGATTTTGGGGTTGCTCGTGTGAAGCTT  
CAAATCCTAATGACATGACTGGGGAGACTGGAACACTTGGTTACATGGCTCCTGAGGT  
TCTCAATGGCAATCCATATAACAGGAAATGTGATGTCTACAGTTTTGGCATCTGTTTATG  
GGAATATATTGCTGTGACATGCCATATCCCGATCTTACTTTTTTCAGAAGTAACTTCAGC  
TGTGGTTTCGCCAGAATCTGAGGCCAGATATACCGAGATGTTGCCCAAGTTCCCTAGCAA  
ATGTAATGAAGCGATGCTGGGATGCCAGTCCAGAGAAGCGGCCAGAGATGGATGAAGT  
TGTTTCAATGTTGGAGGCAATCGACACATCAAAGGTGGCGGCATGATTCCTCCGGAC  
CAGGCTCAGGGTTGTCTCTGTTTTTCGCAAGTACAGAGGGCCGTGA

**>LOC107403422(MAPKKK52)**

ATGGATTTGACTGAAGGAGTGGGAGAGAGTTCGTCACCGCCTAGAAGTTTCGGAAGCT  
ATAGCAACTATGATGTGAGGAACGATGTTTACAATCGGTTAGTGGAGAGCGGCAACGA  
AGACGCTGTTAGCAATCCTGAGTTCCGTGAACAGTTAGACTCTCACTTCAATCGCTTGC  
CTGCTAGTTATGGACTCGATGTTAACATGGATAGAGTGGAAGATGTTTTATTACATCAA  
GGCTCCTTGCCTTGGCAAAAAGACCCGGAGAAGCGGCCTGTTTACCATATCCGTTTTCTTG  
GAGAATATTTCTACTAGAACAGAGGATAATGGCAATCAACTATTTACAAGTACTCTTACA  
ACACCTAGGTCATTGTGTGATGCAGCTAATGAAGAAGTTCCCTGTGTACATAAGAGCAA  
TCATGCAATTGACTTTGAACCCTGTTCTAAGCTTGAGGACTTAAATTTGGATGTTAGAA  
ATAAATCCAAGGACGTGGAGGAAAGATATACAATGGTGAAACTTCCCAGAAGGGAAGA  
TGTTGCTCCTATTCCAATCCATGAAGTGATATTCTCTACCATTGACAAGCCTAAGCTTCT  
TAGCCAGCTTTCTGCTTTGCTGTCTGATATAGGGCTGAACATCCGTGAAGCACACGTTT  
TCTCAACAACCTGATGGCTACTCCTTGGATGTATTTGTGGTCGATGGATGGCCAGTTGAG  
GATACAGATGGTTTATGGGAAGCTATGGAAAAGCAGTTGCTAGAAGTGAGGGTTCAT  
GGTCTAGATCTTCAATCTCATTAGCCGTGGAAAAGCATTGACAGTACAGGCAAA  
ACTTGGAGATTGGGAAATTGATAGAAGATTATTGAAAATGGGAGAACGAATTGCATCG

GGATCCTGTGGAGACTTGTACCATGGAGTTTATCTTGGTCAAGACGTTGCAGTTAAGA  
TTCTTAGGTCTGAACATTTGAATGATGCTGTAGAGGATGAGTTTGCTCAAGAAGTGGCA  
ATTCTCAGGGAAGTCCAGCATAAAAATGTTGTTTCGTTTTGTCCGAGCATGTTACAGTC  
TCCACATTTGTGCATAGTGACAGAGTATATGCCTGGAGGAAGTCTATATGACTATTTGCA  
CAAGAACCATAACGTGATGAAGCTCCCGCAGCTGCTAAAGTTTGCAATCGATGTCTGC  
AGAGGAATGGAGTACTTGCATCAAATAACATAATTCACAGGGATCTGAAGACGGCAA  
ATTTGCTTATGGACACTCATAATGTTGTTAAAGTGGCAGATTTTGGGGTAGCTCGTTTTCC  
AAAATCAAGGAGGAGTAATGACGGCAGAACTGGAACATATAGATGGATGGCGCCTGA  
GGTTATAAACCATCAACCATATGATCAAAAAGCAGATGTATTAGTTTTGCAATTGACT  
CTGGGAGCTAGTGACAGCCAAGGTTCCATATGATTCTATGACTCCATTACAAGCTGCAC  
TTGGAGTGAGACAGGGACTGCGTCCAGATCTTCCCGATAATGCACACCCCAAAGTGT  
AGAATTAATGCAAAGGTCCTGGGATGCTGTTCCCTAGCAATCGGCCTTCCTTCTCTGAGA  
TAGCAGCTGAACTTGAAAATCTGCTTCAGGAAACTCCAGAAGCAGCAAATGGAACCT  
GA

**>LOC107435406(MAPKKK53)**

ATGGAGGAAGACGCTAGCTCTTGGATCAGAAGAACAAAATTTTCCCACACTGTTTGTC  
ATCGTTGGGACTCTTCAAGATTGGCCTCCGTTCCCTTTTCATTGTTTCAGATAGACTGGATTT  
CGGGGTTGAACTCTAGACCCACAAACAGGGAAACTCCTGGTAATCATAACGAAAATCC  
AAGTTATTCACAGATCCAGAGAAATCCCATTACCAACAAGCAGAGATCTTTATCACCTC  
TACCGGAGACTCTACTTTCCGATGAGTTAAGGAAGCTCGATCTGATCGGAAGAGATTC  
TCAACTCCCAACCGTAGGAGGAAAGAGATAGACAAGGGAATTGTGGGAAATGTTTTCC  
ACAAGGATTCCCATGTATCCAAGGCATGGAACCTCGAGTACTAGCCCTCTCAGGCATCTA  
GCTTCCATGAAAGTTAATAACAAGTTGAAGAACCGGAAGGAATCGCCGTGGGCCAAGT  
ATTTTGATCATACTGGTGAAGGGTTACTGCTGTGGAAGCAGCAGATGAATGGAGTGTT  
GATATGTCACAGTTATTTCTTGGGCTTAAATTTGCTCATGGAGCTCATAGCCGGCTTTAC  
CATGGGATTTACTTTGATGAACCTGTTGCCGTTAAGATTATTAGGGTCCCAGATGATGAC  
GAAAGTGGAGCCTTGGCAGCACGATTAGAGAAACAGTTTAGCAGAGAAGTTCATCTTC  
TCTCTCGTCTTACCATCAAATGTCATAAAGTTCAAAGCAGCATGCAGAAAGCCACC  
AGTTTATTGTGTCATCACCGAATATTTATCAGAGGGTTCCTTGAGAGCATACTTGCACAA  
ACTCGAACATAAATCTCTACCGTTACAGAAGCTAATTGTTATTGCCTTGGACATAGCAC  
GTGGAATGGAATTCATTCACTCACAACGTGTTATTCATAGGGACTTAAAGCCTGAAAAC  
ATTCTTATTGATCGAGACTTCCGCCTGAAAGTTGCTGATTTTGGTATAGCATGCGAGGA  
GGCATATTGTGATTCTTTGGCAGATGACCCAGGCACTTACCGATGGATGGCACCTGAGT  
TGATCAAGCATAAATCCTATGGGCGGAAAGTTGATGTGTACAGTTTTGGATTAATTTTAT  
GGGAAATGGTGGCAGGGACAATCCCATATGAGGATATGAACCCATTCAAGCTGCATTT  
GCCGTAGTGAATAAGAATTTGAGGCCTGATATCCCGGGGGACTGTCCGCCTGCTATGCG  
AGCTTTGATCGAACAGTGTTGGTCCTTGCAACCAGATAAAAGGCCAGAGTTTTGGCAG  
ATAGTTAAGTACTAGAACAATTTGAATCTTCACTTGCATATGATGGAACCTTTGAGTCTT  
GTGCTTAACCAAAGTGGCCATGATCATAAGAAGAACTTCTTCTCTGGATTCAGAAGCT  
TGGTCTGTGAATTCTAATAGTTTGTCAATGTCAAAGCCAAAACCAAGGCGAAAATTTAT  
ATTGA

**>LOC107434197(MAPKKK54)**

ATGAATTGGGTTTTGTTATTGATTTTCCGAGTAACCAAAGGATCCTCCTTGTTGTTTCTA  
CCCATTTTGGTAGAACACAAAATGGATGGAATCATCAATGGAGATGCCCTGTTCCAGG

TGAATGGGTGAGGGGAAAATTGGTGGGTTTCAGGTTCTTTTGGGACCATCCATATGGCTT  
TGGCAAATCTACCGGAAGACTTTTCGTTGTGAAATCTGCACAATCTGGTATTGGTGTT  
CAAGCTTTAGAAAACGAAGCCGATATCCTTGAGAGTTTGAATTCACACACATAGTCCA  
TTGCATAGGAAAGGAATTCTCAATTGACAAAAATGGTGAGCAACAAAATTACAATGTG  
TTCTTGGAGTACATGGCAGGAGGAAACTTGTGGATGTGGTACACATATTTGGTGGGTC  
CCTAGATGAGCAAGTTATTAGACTTTACACCAAAGAAATTCTTCTGGGTCTCAAATATC  
TTCATGACAATGGGATTGTTTCATTGTGATTTGAAATGCAAAAATGTGCTCCTGAGTTCC  
TCTGGAAATGTCAAACCTGGCAGATTTTGGGAGCGCAAGAGGATGACCAAAAAAAC  
ACCGATGATGAGGGATTTGTGGACTCTTGGCAAACATTGTTGGAACACCCTTGTGGA  
TGGCACCAGAAGTTTTGAGGAAAAAAGAGTTAGATTTAGCTTCGGATATTTGGTCACT  
GGGATGCACAGTCATTGAAATGGCAACAGGAAACCCCTCCCTGGGATGTGGAAATCACT  
TCCAATCCAATGGCTGCAATTCTGAAGATTGCTTGTGGAAATGACAAACCTCAATTTCC  
TACAAAGTTTTTCGCAAGTGGGTTTGGATTTCTTGGCCAAGTGTGGAAAGAGATCCA  
AGAAAAAGGTGGAAGGCTGAAGAACTGCTTAACCATCCGTTTGTCTGGGGAAAATT  
CATCATTGAGAAAATCATCAAGAGAGGAAGTAGAATTAGTGTCATTCTCACCAGCAAG  
TGTGTTAGACATTAATGTTAATGGAATATTATTATATGGAGAGGGATCAGATTCAGATCA  
GGAAGCAGAAACAAAAACAGAAGCAGAGGATAGTAGATTAATAAATCCATTTCGCAAG  
GAGGTGTCATGAAGGAAATTGGATGGCAGCAAGACAACAGAGAGACAATCATTTTGAT  
TCTTCAGAAAATTGGATTACTGTTAGATGA

**>LOC107435407(MAPKKK55)**

ATGGAGGGAGAGGTTAGCTCTTGGATTAGAAGAACAAAATTTTCCCACACTGTTTGTG  
ATCGTTGGGACTCTTCAAGATTGGCTTCTGTTCTTTCAATGTTTCAGATAGACAGGATTT  
CGGGGTTGAAATCCAGACCCCCAACAGGGAAGCTTCTGGTAATCATAAAGAAAATCC  
AAGTTATTCACAGATTCAGAGAAATCCCGTTACCAACAAACAGAGATCTTTATCACCTC  
TACCGGAGACTCTACTTTCCGAAGAGTTTAAAGAAGCTCGATCTGATTGGAAGAGATT  
CTCAACTCCGAACCGTAGGAGAAAAGAGATAGACAAGGGAATTGTGGGAAATGTTTTC  
CACAAGGATTCCCAAGATCCCAAGTATCCAAGGCATTGAACTCGAGTACTAGCCCTCT  
CAGGCATCTTGCTTCCATGAAAGTTAATGACAAGTCGAAGAACCGGAGGGAATCGCCA  
TGGGCAAGTATTTGATCATGCTGCTGGAAAGGTTACTGCTGTGGAAGCAGCTGATG  
AATGGAGTGTTGATATGTCAAAGTTATTTCTTGGTCTTAAATTTGCTCATGGAGCTCATA  
GCCGGCTTTACCATGGGATTTACTTTGATGAACCTGTTGCCGTTAAGATTATTAGAGTCC  
CAGATGATGACGAAAGCGGAGCTCTGGCAGCTCGTTTAGAGAAACAGTTTAGCAGAG  
AAGTTAATCTTCTATCTCGTCTTACCATCAAATGTTATAAAGTTCAAAGCAGCATGCG  
GAAAGCCACCAGTTTATTGTGTCATCACTGAATATTTATCAGAGGGTTCCTTGAGGGCA  
TATTTGCACAAGCTCGAGCATAAATCTCTTCTTTACAGAAGCTAATTGCTATTGCCTTG  
GACATAGCACGTGGAATGGAATTCATTCACTCTCAACATGTTATTCATAGGGACTTAAA  
GCCGAAAACATTCTTATTGATCAAGACTTCCGCCTAAAAGTTGCTGATTTCCGTATAG  
CATGCGAGGAGACATATTGTGATTCTTTGGCAGATGACCCCGGCACTTACCGATGGATG  
GCACCTGAGTTGATCAAGCATAAATGCTATGGGCGGAAAGTTGATGTGTACAGTTTTGG  
ATTAATCTTATGGGAAATGGTGGCAGGGACAATCCCATTTGAGGATATGAACCCATT  
AAGCTGCATTTGCCGTAGTGAATAAAAATTTGAGGCCTATCATCCAGGGGACTGTCCG  
CCTGCTATGCGAGCTTTGATCGAACAATGTTGGTCTTGGCAACCAGATAAAAGGCCAG  
AGTTTTGGCAGATAGTGAAGGTGCTAGAACAGTTTGTAACGTCGCTAGCATAACGATGG  
AACTTTGAGTCTTGTGCTGAACCAAACCTTGCCACGATCATAAGAAGCAGCTTCTTCG



TGGATCCAGAAGCTTGGTCCTGTGCATTCTACTAGTTCATCTATGCCAAAACCAAACC  
AAAATTCTATTGA

**>LOC107435014(MAPKKK56)**

ATGCATCACATACCACGAATTTTCAACCGTAGCAAGCGAGAAAAATCCATGGATCCGA  
AGAAGAACCCTAGGAAGCCGAGGCTTGAGCGCCGCAATGCTGCGAAGCACATTGATT  
ACGAAGCTTCCACGTCTTCTTCGTGCGATGGAGTCGACGCCGTCGCCGTCGCTCCACAC  
TCGATCGATGGATTTGTTCGGACAAGATGAGCTTCCGTGTGCGAGGAATTGACGGCGAG  
TTCGACGTAATATGCCGGACCTTGGGGCTTTCGGGTATCGAGGATTTGCTATCCCCTC  
GGCGGCATGGGAGGCTCGGAAGATCCGATCGATCTCCGATATTCTACCTAGGTCCAGGC  
TTAATCGGTTAGATAGTTTGAGTGGTTCAGCCAGGGAGGAAGTGAAGGATGAGGTTATT  
CAAGCTGTGGCCGAATTGAAAGATAGGGTCGTGCGGTAGCGTTAGAATTAGGGGTGGTA  
ATAATGAGTTGCCTCAGGCTGATCTTGCCGAGTCCCGTGGTTGTTGTGTTGCTAACGAT  
GGAGCGTGCATGGTGATTTTCATCGGTGGTGGTGGTGGTGGGGGAGGAGGCGGAGGA  
GGAGGAATTAAGGGTGTTCGGCCGCCGGTGTCTAAGCCTCCTCCTTCGATGAGGCTTC  
CGGTGATTGATAAGACGTGCTCGACTTGGGACATTCTGAGGGACTTTGCGCCCGATGA  
AGAAACATCACCTGCGCAACTTCTCCATAAAACGTATAATTCTTCCGATGAAGAAGAA  
GAAAAAGAAGAAGAAAAGCACCACCCAAGAGAAGAAAACCTCCAAGAAGAAGAATC  
ACATCAAGAAGAAGAACAAGTCCACACGGAAGAAGTTGTTAGGCAAGAGAGGAGT  
CTGCGGTGAGGCTTCCGGAGAATGCGTACTCTCCGAGTCGTGTTTCGTTCACTACGTCT  
AATGACGACGACTCTTCTAGCAGTACCACAGAGCCACGTGCAATATTTCCGCCAATG  
CGAGATTAAGGCCATCATCACGTATTGGGAAAAGGGCGATCTTCTGGGTGCGGGATC  
GTTTGGATCTGTTTATGAAGGAATAACTGATGATGGGTACTTTTTTGTGCTGTGAAGGAGG  
TTTCTTGCTTGATCAGGGAAAGTCAAGGAAAGCAAAGTGTATCAACTTGAGCAGGA  
GATTGCACTGTTAAGCCAGTTTGAACATGAAAACATTGTTCAATATTTGGGCACTGATA  
AGGATGAATCAAACTTTATATTTTTCTAGAACTTGTAATAAGGTTCTCTGCAAAGT  
CTTTATCAGAAGTATAACCTTCGAGATTCACAAGTTTCTGCCTACACAAGACAGATACT  
GCATGGTCTGAAGTATCTCCATGACCGAAATGTGGTTCACAGGGATATTAATGTGCAA  
ATATATTGGTCTCTGCCAGTGGATCCGTTAAGCTTGCAGATTTTGGGTGGCTAAGGCA  
ACCAAATTGAATGATGTTCACTCTTCCAAGGGGACTGCATGCTGGATGGCACCTGAGG  
TTGTTAATAGGAGGAACCAAGGATATGGGCTGCCGGCTGATATATGGAGCCTGGGATGC  
ACTGTGTTGGAGATGTTAACCAGACAGATCCCGTACTCTGATTTGGAGTGGATGCAGG  
CAATATTTGCAATAGGAAAGGGTGTGCTACCTTCTGTTTCTGATTCTCTCTCGAAAGAT  
GCACGGGATTTTATCTTGCAAGTGTGAAAGTTAATCCAATGATCGTCTACTGCTTGT  
CAGCTGTTAGACCACCCATTTGTGAAGAGACGTCTTTCCTCATCTTCTGGCTCTGCGTC  
TCCTTACCATTTTGGGGGGCGGAGTTAA