```
CLUSTAL O(1.2.4) multiple sequence alignment


tr|Q00WH8|Q00WH8_OSTTA                    ------------------------------------------------------------ 0
SCA5|SCEZRZ3019C12.g.p1                   ------------------------------------------------------------ 0
SCA3|SP803280_c110556_g1_i2_m.112799      ------------------------------------------------------------ 0
SCA1_2|Sh_210F11_p000130                  ------------------------------------------------------------ 0
SCA3|SP803280_c104339_g1_i3_m.83754       ------------------------------------------------------------ 0
SCA4|evm.model.SCSP803280_000048991.1     ------------------------------------------------------------ 0
SCA3|SP803280_c109234_g1_i4_m.105886      ------------------------------------------------------------ 0
SCA3|SP803280_c102057_g1_i4_m.74365       ------------------------------------------------------------ 0
SAC2_1|SUGdenovo0588378.p1                ------------------------------------------------------------ 0
5DXF_1|Chains                             ------------------------------------------------------------ 0
XP_721536.1                               ------------------------------------------------------------ 0
tr|A0A090N4I6|A0A090N4I6_OSTTA            ------------------------------------------------------------ 0
AtTPS5_AT4G17770.1                        ------------------------------------------------------------ 0
AtTPS6_AT1G68020.2                        ------------------------------------------------------------ 0
OsTPS4_LOC_Os03g12360.1                   ------------------------------------------------------------ 0
ZmTPSII.2.2_GRMZM2G099860_T01             ------------------------------------------------------------ 0
SCA1_2|Sh_203E09_p000020                  ------------------------------------------------------------ 0
SAC2_1|SUGdenovo0315072.p1                ------------------------------------------------------------ 0
SCA3|SP803280_c117830_g1_i1_m.154722      ------------------------------------------------------------ 0
OsTPS10_LOC_Os09g23350.1                  ------------------------------------------------------------ 0
ZmTPSII.2.1_GRMZM2G019183_T02             ------------------------------------------------------------ 0
AtTPS7_AT1G06410.1                        ------------------------------------------------------------ 0
OsTPS3_LOC_Os01g53000.1                   ------------------------------------------------------------ 0
OsTPS6_LOC_Os05g44100.1                   ------------------------------------------------------------ 0
OsTPS2_LOC_Os01g54560.1                   ------------------------------------------------------------ 0
ZmTPSII.3.3_GRMZM2G118462_T01             ------------------------------------------------------------ 0
SCA2_1|c95057f1p13337.p1                  ------------------------------------------------------------ 0
SCA4|evm.model.SCSP803280_000001563.1     ------------------------------------------------------------ 0
ZmTPSII.3.1_GRMZM2G304274_T01             ------------------------------------------------------------ 0
ZmTPSII.3.2_GRMZM2G123277_T01             ------------------------------------------------------------ 0
AtTPS11_AT2G18700.1                       ------------------------------------------------------------ 0
OsTPS7_LOC_Os08g31980.1                   ------------------------------------------------------------ 0
ZmTPSII.4.3_GRMZM2G366659_T01             ------------------------------------------------------------ 0
SCA2_1|c94760f1p43082.p1                  ------------------------------------------------------------ 0
ZmTPSII.4.2_GRMZM2G008226_T01             ------------------------------------------------------------ 0
OsTPS11_LOC_Os09g20990.1                  ------------------------------------------------------------ 0
ZmTPSII.4.1_GRMZM2G527891_T01             ------------------------------------------------------------ 0
AtTPS10_AT1G60140.1                       ------------------------------------------------------------ 0
AtTPS8_AT1G70290.1                        ------------------------------------------------------------ 0
AtTPS9_AT1G23870.1                        ------------------------------------------------------------ 0
OsTPS9_LOC_Os09g25890.1                   ------------------------------------------------------------ 0
OsTPS5_LOC_Os02g54820.1                   ------------------------------------------------------------ 0
ZmTPSII.5.3_GRMZM2G312521_T01             --------MPSFPRANVVDKTRGPSPC----------------------AHAVTPPTLTSG 31
ZmTPSII.5.4_GRMZM2G122231_T01             ------------------------------------------------------------ 0
OsTPS8_LOC_Os08g34580.1                   ------------------------------------------------------------ 0
ZmTPSII.5.1_GRMZM2G007736_T02             MEAGASSRYPLWTRGGVQTRMEGMRGGVWKRRARMEGRRRRRMAVGFAGGDLGRGAREGG 60
ZmTPSII.5.2_GRMZM2G079928_T01             ------------------------------------------------------------ 0
CAA48913.1                                ------------------------------------------------------------ 0
XP_028127761.1                            ------------------------------------------------------------ 0
ART29424.1                                ------------------------------------------------------------ 0
pdb|5HUU|B                                ------------------------------------------------------------ 0
tr|Q01GJ2|Q01GJ2_OSTTA                    --------MPADG----STPE---SPPR---------------------R----SRAFADV 21
AtTPS1_AT1G78580.1                        ------------------------------------------------------------ 0
OsTPS1_LOC_Os05g44210.1                   --------MPTPA----PSASSSSSSCG---------------------G----GGGGAGA 24
ZmTPSI.1.1_GRMZM2G068943_T02              --------MSSDA----ARGQRGI-NCT---------------------R----GDA--AA 21
SCA3|SP803280_c107577_g2_i1_m.97794       --------MSSDA----AGGQRSISNCT---------------------R----GDAAAAA 24
SCA1_2|Sh_239M11_p000040                  --------MSSDA----AGGQRSISNCT---------------------R----GDAAAAA 24
ZmTPSI.1.2_GRMZM2G001304_T01              ------------------------------------------------------------ 0
AtTPS4_AT4G27550.1                        ------------------------------------------------------------ 0
AtTPS2_AT1G16980.1                        ------------------------------------------------------------ 0
AtTPS3_AT1G17000.1                        ------------------------------------------------------------ 0


tr|Q00WH8|Q00WH8_OSTTA                    ------------------------------------------------------------ 0
SCA5|SCEZRZ3019C12.g.p1                   ------------------------------------------------------------ 0
SCA3|SP803280_c110556_g1_i2_m.112799      ------------------------------------------------------------ 0
SCA1_2|Sh_210F11_p000130                  ------------------------------------------------------------ 0
SCA3|SP803280_c104339_g1_i3_m.83754       ------------------------------------------------------------ 0
SCA4|evm.model.SCSP803280_000048991.1     ------------------------------------------------------------ 0
SCA3|SP803280_c109234_g1_i4_m.105886      ------------------------------------------------------------ 0
SCA3|SP803280_c102057_g1_i4_m.74365       ------------------------------------------------------------ 0
SAC2_1|SUGdenovo0588378.p1                ------------------------------------------------------------ 0
5DXF_1|Chains                             ------------------------------------------------------------ 0
XP_721536.1                               ------------------------------------------------------------ 0
tr|A0A090N4I6|A0A090N4I6_OSTTA            ------------------------------------------------------------ 0
AtTPS5_AT4G17770.1                        ------------------------------------------------------------ 0
AtTPS6_AT1G68020.2                        ------------------------------------------------------------ 0
OsTPS4_LOC_Os03g12360.1                   ------------------------------------------------------------ 0
ZmTPSII.2.2_GRMZM2G099860_T01             ------------------------------------------------------------ 0
SCA1_2|Sh_203E09_p000020                  ------------------------------------------------------------ 0
SAC2_1|SUGdenovo0315072.p1                ------------------------------------------------------------ 0
SCA3|SP803280_c117830_g1_i1_m.154722      ------------------------------------------------------------ 0
OsTPS10_LOC_Os09g23350.1                  ------------------------------------------------------------ 0
ZmTPSII.2.1_GRMZM2G019183_T02             ------------------------------------------------------------ 0
AtTPS7_AT1G06410.1                        ------------------------------------------------------------ 0
OsTPS3_LOC_Os01g53000.1                   ------------------------------------------------------------ 0
OsTPS6_LOC_Os05g44100.1                   ------------------------------------------------------------ 0
OsTPS2_LOC_Os01g54560.1                   ------------------------------------------------------------ 0
ZmTPSII.3.3_GRMZM2G118462_T01             ------------------------------------------------------------ 0
SCA2_1|c95057f1p13337.p1                  ------------------------------------------------------------ 0
SCA4|evm.model.SCSP803280_000001563.1     ------------------------------------------------------------ 0
ZmTPSII.3.1_GRMZM2G304274_T01             ------------------------------------------------------------ 0
ZmTPSII.3.2_GRMZM2G123277_T01             ------------------------------------------------------------ 0
AtTPS11_AT2G18700.1                       ------------------------------------------------------------ 0
OsTPS7_LOC_Os08g31980.1                   ------------------------------------------------------------ 0
ZmTPSII.4.3_GRMZM2G366659_T01             ------------------------------------------------------------ 0
SCA2_1|c94760f1p43082.p1                  ------------------------------------------------------------ 0
ZmTPSII.4.2_GRMZM2G008226_T01             ------------------------------------------------------------ 0
OsTPS11_LOC_Os09g20990.1                  ------------------------------------------------------------ 0
ZmTPSII.4.1_GRMZM2G527891_T01             ------------------------------------------------------------ 0
AtTPS10_AT1G60140.1                       ------------------------------------------------------------ 0
AtTPS8_AT1G70290.1                        ------------------------------------------------------------ 0
AtTPS9_AT1G23870.1                        ------------------------------------------------------------ 0
OsTPS9_LOC_Os09g25890.1                   ------------------------------------------------------MP--- 2
OsTPS5_LOC_Os02g54820.1                   ------------------------------------------------------------ 0
ZmTPSII.5.3_GRMZM2G312521_T01             SPRPCPFLLPRRSDTHTHIQLAIFVPPVLLPCPRPTSAFLSPETSAKVIDPSPTPTPTDR 91
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ZmTPSII.5.4_GRMZM2G122231_T01          ------------------------------------------------------------ 0
OsTPS8_LOC_Os08g34580.1                ------------------------------------------------------------ 0
ZmTPSII.5.1_GRMZM2G007736_T02          HRALCAYLENKKSGGPGW------KIPLPACCAPALPSRGGPRPAVKYYDPIPRFQPHEN 114
ZmTPSII.5.2_GRMZM2G079928_T01          ------------------------MTCLGHSCGPR---ASGPCRAAIW--PFVGVQQ--- 28
CAA48913.1                             ------------------------------------------------------------ 0
XP_028127761.1                         ------------------------------------------------------------ 0
ART29424.1                             ------------------------------------------------------------ 0
pdb|5HUU|B                             ------------------------------------------------------------ 0
tr|Q01GJ2|Q01GJ2_OSTTA                 PDAATPFTSPRRRSVDA-------------------------------SAS-------- 41
AtTPS1_AT1G78580.1                     MPGNK----YNCSSSHI-------------------------------PLS-------- 16
OsTPS1_LOC_Os05g44210.1                ASS--------------Y------------------------------SSS-------- 31
ZmTPSI.1.1_GRMZM2G068943_T02           MPTSSPFVGD--SGGAG-------------------------------SPI-------- 39
SCA3|SP803280_c107577_g2_i1_m.97794    MPTSSPFVGD-SSSGAG-------------------------------SPI-------- 43
SCA1_2|Sh_239M11_p000040               MPTSSPFVGGDSSGGAG-------------------------------SPI-------- 44
ZmTPSI.1.2_GRMZM2G001304_T01           ------------------------------------------------------------ 0
AtTPS4_AT4G27550.1                     ------------------------------------------------------------ 0
AtTPS2_AT1G16980.1                     ------------------------------------------------------------ 0
AtTPS3_AT1G17000.1                     ------------------------------------------------------------ 0


tr|Q00WH8|Q00WH8_OSTTA                 ------------------------------------------------------------ 0
SCA5|SCEZRZ3019C12.g.p1                ------------------------------------------------------------ 0
SCA3|SP803280_c110556_g1_i2_m.112799   ------------------------------------------------------------ 0
SCA1_2|Sh_210F11_p000130               ------------------------------------------------------------ 0
SCA3|SP803280_c104339_g1_i3_m.83754    ------------------------------------------------------------ 0
SCA4|evm.model.SCSP803280_000048991.1  ------------------------------------------------------------ 0
SCA3|SP803280_c109234_g1_i4_m.105886   ------------------------------------------------------------ 0
SCA3|SP803280_c102057_g1_i4_m.74365    ------------------------------------------------------------ 0
SAC2_1|SUGdenovo0588378.p1             ------------------------------------------------------------ 0
5DXF_1|Chains                          ------------------------------------------------------------ 0
XP_721536.1                            ------------------------------------------------------------ 0
tr|A0A090N4I6|A0A090N4I6_OSTTA         ------------------------------------------------------------ 0
AtTPS5_AT4G17770.1                     ----------------------------------------MVSRSY-----SNLLDLAS 14
AtTPS6_AT1G68020.2                     ----------------------------------------MVSRSY-----SNLLELAS 14
OsTPS4_LOC_Os03g12360.1                ----------------------------------------MVSRSY-----SNLLDLAT 14
ZmTPSII.2.2_GRMZM2G099860_T01          ----------------------------------------MASRSY-----SNLLDLAT 14
SCA1_2|Sh_203E09_p000020               ------------------------------------------------------------ 0
SAC2_1|SUGdenovo0315072.p1             ----------------------------------------MASRSY-----SNLLDLAT 14
SCA3|SP803280_c117830_g1_i1_m.154722   ----------------------------------------MASRSY-----SNLLDLAT 14
OsTPS10_LOC_Os09g23350.1               ----------------------------------------MVSRSY-----SNLLELAA 14
ZmTPSII.2.1_GRMZM2G019183_T02          ----------------------------------------MVSRSY-----SNLLELAA 14
AtTPS7_AT1G06410.1                     ----------------------------------------MISRSY-----TNLLDLAS 14
OsTPS3_LOC_Os01g53000.1                ----------------------------------------MFSRSY-----TNLVDLAN 14
OsTPS6_LOC_Os05g44100.1                ----------------------------------------MMSRSY-----TNLLDLAA 14
OsTPS2_LOC_Os01g54560.1                ----------------------------------------MMSRSY-----TNLLDLAE 14
ZmTPSII.3.3_GRMZM2G118462_T01          ----------------------------------------MMSRSY-----TNLLDLAE 14
SCA2_1|c95057f1p13337.p1               ------------------------------------------------------------ 0
SCA4|evm.model.SCSP803280_000001563.1  ----------------------------------------MMSRSY-----TNLLDLAE 14
ZmTPSII.3.1_GRMZM2G304274_T01          ----------------------------------------MMSRSY-----TNLLDLAE 14
ZmTPSII.3.2_GRMZM2G123277_T01          ----------------------------------------MMSRSY-----TNLLDLAE 14
AtTPS11_AT2G18700.1                    ----------------------------------------MSPESW-----KDQLSLVS 14
OsTPS7_LOC_Os08g31980.1                ----------------------------------------MVSKSY-----SNLLEMSC 14
ZmTPSII.4.3_GRMZM2G366659_T01          ----------------------------------------MVSKSY-----SNLLDMTP 14
SCA2_1|c94760f1p43082.p1               ----------------------------------------MVSKSY-----SNLLDMTS 14
ZmTPSII.4.2_GRMZM2G008226_T01          ----------------------------------------MVSKSY-----SNLLDLTS 14
OsTPS11_LOC_Os09g20990.1               ----------------------------------------MVSKSY-----TNLLDMSG 14
ZmTPSII.4.1_GRMZM2G527891_T01          ----------------------------------------MVLKSH-----TNLLDMCC 14
AtTPS10_AT1G60140.1                    ----------------------------------------MGSKSF-----GNLLDLAS 14
AtTPS8_AT1G70290.1                     ----------------------------------------MVSRSC-----ANFLDLSS 14
AtTPS9_AT1G23870.1                     ----------------------------------------MVSRSC-----ANFLDLAS 14
OsTPS9_LOC_Os09g25890.1                -----------------------HHRHLTPSP-SHE------------------------ 14
OsTPS5_LOC_Os02g54820.1                ----------------------------------------MPSLSC-----HNLLDLVA 14
ZmTPSII.5.3_GRMZM2G312521_T01          PPNEPDTPRRVAALLFSSCAIAAVSTSATPTD-RQEEDEEAMPSLSC-----HNLLDLAA 145
ZmTPSII.5.4_GRMZM2G122231_T01          ----------------------------------------MPSISC-----HNLLDLAA 14
OsTPS8_LOC_Os08g34580.1                ----------------------------------------MPS---------------- 3
ZmTPSII.5.1_GRMZM2G007736_T02          P-----------------------------------KSQTK---------------- 120
ZmTPSII.5.2_GRMZM2G079928_T01          ----------------------------------------INL---------------- 31
CAA48913.1                             ------------------------------------------------------------ 0
XP_028127761.1                         ------------------------------------------------------------ 0
ART29424.1                             ------------------------------------------------------------ 0
pdb|5HUU|B                             ------------------------------------------------------------ 0
tr|Q01GJ2|Q01GJ2_OSTTA                 ---------PIRH------VDSEIFARASR---ASMSSLNAMSTDGSMYDLTRRMEGLAG 83
AtTPS1_AT1G78580.1                     ---------RTERLLRDRELREKRKSNRARNPNDVAGSSE------------------NS 49
OsTPS1_LOC_Os05g44210.1                ---------PDDRMLRGECGRRHPFA---SSAAVGAGSPDAMDTDSAEPS-----SAATS 74
ZmTPSI.1.1_GRMZM2G068943_T02           ---------RVERMVRERSRRYDIFA------------SDAMDTDAE------------- 65
SCA3|SP803280_c107577_g2_i1_m.97794    ---------RVDRMVREHGRRYDIFA------------SDAMDTDGAEAA-----S--AS 75
SCA1_2|Sh_239M11_p000040               ---------RVDRMVWEHGRRYDIFA------------SDAMDTDGAEAA-----S--AS 76
ZmTPSI.1.2_GRMZM2G001304_T01           ------------------------------------------------------------ 0
AtTPS4_AT4G27550.1                     ------------------------------------------------------------ 0
AtTPS2_AT1G16980.1                     ------------------------------------------------------------ 0
AtTPS3_AT1G17000.1                     ------------------------------------------------------------ 0


tr|Q00WH8|Q00WH8_OSTTA                 ------------------------------------------------------------ 0
SCA5|SCEZRZ3019C12.g.p1                ------------------------------------------------------------ 0
SCA3|SP803280_c110556_g1_i2_m.112799   ------------------------------------------------------------ 0
SCA1_2|Sh_210F11_p000130               ------------------------------------------------------------ 0
SCA3|SP803280_c104339_g1_i3_m.83754    ------------------------------------------------------------ 0
SCA4|evm.model.SCSP803280_000048991.1  ------------------------------------------------------------ 0
SCA3|SP803280_c109234_g1_i4_m.105886   ------------------------------------------------------------ 0
SCA3|SP803280_c102057_g1_i4_m.74365    ------------------------------------------------------------ 0
SAC2_1|SUGdenovo0588378.p1             ------------------------------------------------------------ 0
5DXF_1|Chains                          ----------------------------MAPQQVNAFS------------------AN- 12
XP_721536.1                            ----------------------------MAPQQVNAFS------------------AN- 12
tr|A0A090N4I6|A0A090N4I6_OSTTA         ------------------------------MRRTANNNSSVTDLQALVASEVDVGGRSSG 30
AtTPS5_AT4G17770.1                     GNFHS------------------FSREKKRFPRVATVTG--------VLSELDDDNNSN- 47
AtTPS6_AT1G68020.2                     GDSPT------------------FGRMNRQIPRIMAVAG--------IMSNIDNDS---- 44
OsTPS4_LOC_Os03g12360.1                GAADQAPAPA-----------ALG-ALRRRLPRVVTTAG--------LIDDSPLSP---- 50
ZmTPSII.2.2_GRMZM2G099860_T01          GAADQAPAVA-----------ALG-ALRRRLPRVVTTPG--------LIDDSPASP---- 50
SCA1_2|Sh_203E09_p000020               ------------------------------------------------------------ 0
SAC2_1|SUGdenovo0315072.p1             GAADQAPAAA-----------AIG-ALRRRLPRVVTNPG--------FIDDSPASP---- 50
SCA3|SP803280_c117830_g1_i1_m.154722   GAADQAPAAA-----------AIG-ALRRRLPRVVTNPG--------FIDDSPA------ 48
OsTPS10_LOC_Os09g23350.1               GGGGGGGGEG-----------PLPSLGRRRIPRVVTASG--------IVPDLDYSDDDAA 55
ZmTPSII.2.1_GRMZM2G019183_T02          GGSG----GE-----------PLPSLGRRRIPRVVTASG--------IVPDLDVSDAASA 51
AtTPS7_AT1G06410.1                     GNFPVMGRE------------------RRRLPRVMTVPG--------NVSEFDEDQ---- 44
OsTPS3_LOC_Os01g53000.1                GNLSALDYGGGGGGGGGNGAGGRPPRARRMQRTMTTPG--------TLAELDEER---- 62
OsTPS6_LOC_Os05g44100.1                GNFEALGPAGG----G-----RRRSFGAKRMTRVMTVPG--------TLSELDDEDD-E- 55
OsTPS2_LOC_Os01g54560.1                GNFAALGPGG--GGGGRR---RSGSFGLKRMSRVMTVPG--------TLSELDGEDDSE- 60
ZmTPSII.3.3_GRMZM2G118462_T01          GNFAALGPAAGAGGGGRQ---RQGSFGLRRMSRVMTVPG--------TLSELDGEDESE- 62
SCA2_1|c95057f1p13337.p1               ---------------------------MRRMSRVMTVPG--------TLSELDGEDESE- 24
SCA4|evm.model.SCSP803280_000001563.1  GNFAALGPA---GGSGRQ---RQGSFGMRRMSRVMTVPG--------TLSELDGEDESE- 59
ZmTPSII.3.1_GRMZM2G304274_T01          GNFAALGPV---GGSGRQ---RHGSFGLRRMSRVMTVPG--------TLTELDGEDESE- 59
ZmTPSII.3.2_GRMZM2G123277_T01          GNFAALGPA---GGSGRQ---RHGSFGLRRMSRVMTVPG--------TLSELDGEDESE- 59
AtTPS11_AT2G18700.1                    ADDYRIM------------------GRNRIPNAVTKLSG--------LE---------T- 38
OsTPS7_LOC_Os08g31980.1                GDGVDFR------------------QPFKSLPRVVTSPG--------IISDPDWDTRSD- 47
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ZmTPSII.4.3_GRMZM2G366659_T01          GDGFDFR------------------RPFKSLPRVVTSPS--------IISDHDWDSISD- 47
SCA2_1|c94760f1p43082.p1               GDGFDFR------------------QPFKSLPRVVTSPG--------IISDPDWDTISD- 47
ZmTPSII.4.2_GRMZM2G008226_T01          GDGFDFR------------------QPFKSLPRVVTSPG--------IISDTDWDTISD- 47
OsTPS11_LOC_Os09g20990.1               EDVFDFQ------------------QPFRSLPRFVTSPS--------ITSNPDWDTSNA- 47
ZmTPSII.4.1_GRMZM2G527891_T01          EDVFDFQ------------------QPLRSPRHVVNSPG--------IISDPDWESSND- 47
AtTPS10_AT1G60140.1                    GDLLDIP------------------QTPRYLPRVMTVPG--------IISDVDGYGISD- 47
AtTPS8_AT1G70290.1                     WDLLDFP------------------QTPRTLPRVMTVPG--------IITDVDGDTTSE- 47
AtTPS9_AT1G23870.1                     WDLLDFP------------------QTQRALPRVMTVPG--------IISELDGGYSDG- 47
OsTPS9_LOC_Os09g25890.1                --EHETPNP-----------------SLTPPPMQLAALA-------------------- 34
OsTPS5_LOC_Os02g54820.1                AADDAAPSP-----------------ASLRLPRVMSAAS-------------------- 36
ZmTPSII.5.3_GRMZM2G312521_T01          ADEVPLPSP------------------TPLRLPRVMSVAS-------------------- 167
ZmTPSII.5.4_GRMZM2G122231_T01          ADDVPLPSP------------------TPLRLPRVMSVAS-------------------- 36
OsTPS8_LOC_Os08g34580.1                -----LPN----------------------------SGDE-------------------- 10
ZmTPSII.5.1_GRMZM2G007736_T02          -----RPNP-----------------CAAQAA-AMLSVS-------------------- 136
ZmTPSII.5.2_GRMZM2G079928_T01          -----KATT-----------------GEVMVS-KTSSPS-------------------- 47
CAA48913.1                             ------------------------------------------------------------ 0
XP_028127761.1                         ------------------------------------------------------------ 0
ART29424.1                             ------------------------------------------------------------ 0
pdb|5HUU|B                             ------------------------------------------------------------ 0
tr|Q01GJ2|Q01GJ2_OSTTA                 SAVFDAQGQ------------QSEELESTRVDRLLRERA---------------EQLKRT 116
AtTPS1_AT1G78580.1                     ENDLRLEGD------------SSRQY-VE---QYLE--G---------------AAAAMA 76
OsTPS1_LOC_Os05g44210.1                VADFGARSP------------FSPGAASP---ANMDDAG---------------GASAAG 104
ZmTPSI.1.1_GRMZM2G068943_T02           -AAFALDGV-------------QSPGRASP---ANMEDAG---------------GA-A-- 91
SCA3|SP803280_c107577_g2_i1_m.97794    AGAFAVDGV------------QSPGRASP---ANMEDAG---------------GA-AAG 104
SCA1_2|Sh_239M11_p000040               AGAFAVDGV------------QSPGRASP---ANMEDAG---------------GA-AAG 105
ZmTPSI.1.2_GRMZM2G001304_T01           ------------------------------------------------------------ 0
AtTPS4_AT4G27550.1                     ------------------------------------------------------------ 0
AtTPS2_AT1G16980.1                     ------------------------------------------------------------ 0
AtTPS3_AT1G17000.1                     ------------------------------------------------------------ 0


tr|Q00WH8|Q00WH8_OSTTA                 ------------------------------------------------------------ 0
SCA5|SCEZRZ3019C12.g.p1                ------------------------------------------------------------ 0
SCA3|SP803280_c110556_g1_i2_m.112799   ------------------------------------------------------------ 0
SCA1_2|Sh_210F11_p000130               ------------------------------------------------------------ 0
SCA3|SP803280_c104339_g1_i3_m.83754    ------------------------------------------------------------ 0
SCA4|evm.model.SCSP803280_000048991.1  ------------------------------------------------------------ 0
SCA3|SP803280_c109234_g1_i4_m.105886   ------------------------------------------------------------ 0
SCA3|SP803280_c102057_g1_i4_m.74365    ------------------------------------------------------------ 0
SAC2_1|SUGdenovo0588378.p1             ------------------------------------------------------------ 0
5DXF_1|Chains                          --------GSIPSPKEFEGKGKLKLSGRILNVMTSLPLQIISDYDNKT---------GQY 55
XP_721536.1                            --------GSIPSPKEFEGKGKLKLSGRILNVMTSLPLQIISDYDNKT---------GQY 55
tr|A0A090N4I6|A0A090N4I6_OSTTA         ----D---------LSAQSGASETRGDRVFVVSNTLPLKMREDAAAGK--------MYGH 69
AtTPS5_AT4G17770.1                     --------------SVCSDAPSSVTQDRIIIVGNQLPIKSHRNS--------------AG 79
AtTPS6_AT1G68020.2                     ------------------KDTDLSPKDRIIIVANELPIRAQRRVDGNGSGSSSSSTCCSK 86
OsTPS4_LOC_Os03g12360.1                ------------------STPSPSPRPRTIVVANHLPIRAHRPA---S---------PSE 80
ZmTPSII.2.2_GRMZM2G099860_T01          ------------------ST---PPRPRTIIVANQLPIRSHRPE---S---------PEE 77
SCA1_2|Sh_203E09_p000020               ------------------------------------------------------------ 0
SAC2_1|SUGdenovo0315072.p1             ------------------ST---PARPRTIIVANQLPIRSRRPA---S---------PEE 77
SCA3|SP803280_c117830_g1_i1_m.154722   -------------------SPSTPARPRTIIVANQLPIRSRRPA---S---------PEE 77
OsTPS10_LOC_Os09g23350.1               SAASS---------SDHSSAHSHAPRERAIIVANQLPIRASRR---GG---------GGG 94
ZmTPSII.2.1_GRMZM2G019183_T02          A----------------DQSSHAPRERVIIVANQLPVRASRRAAAGA---------GGG 85
AtTPS7_AT1G06410.1                     ---AY---------SVSSDNPSSVSSDRMIIVANRLPLKAEKR---------------NG 77
OsTPS3_LOC_Os01g53000.1                ---AG---------SVTSDVPSSLASDRLIVVANTLPVRCERRPD-------------GR 97
OsTPS6_LOC_Os05g44100.1                PAATS---------SVASDVPSSAACERLIVVANQLPVVARRRPGA------------AAG 95
OsTPS2_LOC_Os01g54560.1                HAATN---------SVASDVPSSVAGDRVIVVSNQLPVVARRRPD-------------GR 98
ZmTPSII.3.3_GRMZM2G118462_T01          PAATS---------SVASDAPSSVAADRLIVVSNQLPIVARRRPD-------------GR 100
SCA2_1|c95057f1p13337.p1               PAATN---------SVASDAPSSLAADRVIVVSNQLPIVARRRPD-------------GR 62
SCA4|evm.model.SCSP803280_000001563.1  PAATN---------SVASDAPSSLAADRVIVVSNQLPIVARRRPD-------------GR 97
ZmTPSII.3.1_GRMZM2G304274_T01          PAATS---------SVASDVPSSVAADRLIVVSNQLPIVARRRPD-------------GR 97
ZmTPSII.3.2_GRMZM2G123277_T01          PAATS---------SVASDVPSSVAVDRLIVVSNQLPIVARRRPD-------------GR 97
AtTPS11_AT2G18700.1                    ---------------DDPNGGAWVTKPKRIVVSNQLPLRAHRDIS-------------SN 70
OsTPS7_LOC_Os08g31980.1                ---------------GDSVGSAS-SVERKIIVANFLPLNCTKDE--------------AG 77
ZmTPSII.4.3_GRMZM2G366659_T01          ---------------GDSVGSAF-SIERKIIVANFLPLNCTRDE--------------TG 77
SCA2_1|c94760f1p43082.p1               ---------------GDSVGSAS-STKKKIIVANFLPLNCTRDE--------------TG 77
ZmTPSII.4.2_GRMZM2G008226_T01          ---------------GDSVGSAS-STERKIIVANFLPLNCTRDE--------------TG 77
OsTPS11_LOC_Os09g20990.1               ---------------DDSVGPASCC-VRKIIVSNFLPLNCTKDEA-------------TG 78
ZmTPSII.4.1_GRMZM2G527891_T01          ---------------GNSVGSMPFCFKRKIIVANFLPVICAKNEA-------------TG 79
AtTPS10_AT1G60140.1                    ---------------GDSDVISLPCRERKIIVANFLPLNGKKDSE-------------TG 79
AtTPS8_AT1G70290.1                     ---------------V--TSTSGGSRERKIIVANMLPLQSKRDAE-------------TG 77
AtTPS9_AT1G23870.1                     ---------------SSDVNSSNSSRERKIIVANMLPLQAKRDTE-------------TG 79
OsTPS9_LOC_Os09g25890.1                ---------------SDEPPPPPPEQSPRRIVVAHRLPLNATPDPG------------SPF 68
OsTPS5_LOC_Os02g54820.1                ---------------PASPTSPSTPAPARRVVVSHRLPLRAAADAA------------SPF 70
ZmTPSII.5.3_GRMZM2G312521_T01          ---------------PASPTSPSPPAPPRRVIVSHRLPLRASPDPS------------APF 201
ZmTPSII.5.4_GRMZM2G122231_T01          ---------------PASPTSPPAPAPPRRVIVSHRLPLRASPDPA------------APF 70
OsTPS8_LOC_Os08g34580.1                ---------------GGAPPPTPPPPGARRVVVAHRLPLRADPNPG-------------APH 44
ZmTPSII.5.1_GRMZM2G007736_T02          ---------------ASDGDRSPCPVEARRIVVTHRLPLHAEPNPD------------APY 170
ZmTPSII.5.2_GRMZM2G079928_T01          ---------------ASNGELSTSPVEARRIVVTYRLPLRAEPNLD------------SPH 81
CAA48913.1                             --------------------------MSRLVVVSNRIAPPD--------------------- 15
XP_028127761.1                         -------------MRMILSKDVVASSGCMIVVSNRLPFVLQRDK--------------DG 33
ART29424.1                             --------------------DVVASSGSMIVVSNRLPFVLQRDT--------------DG 26
pdb|5HUU|B                             ----------------------MVQGKVLVVSNRIPVTIKRLD--------------NG 23
tr|Q01GJ2|Q01GJ2_OSTTA                 RSQTNLVSGEIA-EESAVFEEEEPVRESLIIAANRLPVSVKRKA--------------DG 161
AtTPS1_AT1G78580.1                     H--------D---DACERQEVRPYNRQRLLVVANRLPVSAVRRG--------------ED 111
OsTPS1_LOC_Os05g44210.1                HAARPPLAGP---RSGFRRLGLRGMKQRLLVVANRLPVSANRRG--------------ED 147
ZmTPSI.1.1_GRMZM2G068943_T02           -AARPPLAGS---RSGFRRLGLRGMKQRLLVVANRLPVSANRRG--------------ED 133
SCA3|SP803280_c107577_g2_i1_m.97794    HAARPPLAGS---RSGFRRLGLRGMKQRLLVVANRLPVSANRRG--------------ED 147
SCA1_2|Sh_239M11_p000040               HAARPPLAGS---RSGFRRLGLRGMKQRLLVVANRLPVSANRRG--------------ED 148
ZmTPSI.1.2_GRMZM2G001304_T01           ------------------------------------------------------------ 0
AtTPS4_AT4G27550.1                     ----------------------MARPRLLVVSMSLPVTAKRTG--------------EE 23
AtTPS2_AT1G16980.1                     ----------------MDYDDARGERPRLLVVANRLPVSAKRTG--------------EN 30
AtTPS3_AT1G17000.1                     ----------------MGYDNVCGERQTLLVVANRLPASAKRTG--------------EH 30
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R9

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tr|Q00WH8|Q00WH8_OSTTA                 ------------------------------------------------------------ 0
SCA5|SCEZRZ3019C12.g.p1                ------------------------------------------------------------ 0
SCA3|SP803280_c110556_g1_i2_m.112799   ------------------------------------------------------------ 0
SCA1_2|Sh_210F11_p000130               ------------------------------------------------------------ 0
SCA3|SP803280_c104339_g1_i3_m.83754    ------------------------------------------------------------ 0
SCA4|evm.model.SCSP803280_000048991.1  ------------------------------------------------------------ 0
SCA3|SP803280_c109234_g1_i4_m.105886   ------------------------------------------------------------ 0
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SCA3|SP803280_c102057_g1_i4_m.74365          ------------------------------------------------------------ 0
SAC2_1|SUGdenovo0588378.p1                   ------------------------------------------------------------ 0
5DXF_1|Chains                                YWDVETVRGNSALYSSQHFL---AENKEWETHLIAWTGELINKKKDTSSLTADTLQDDPL 112
XP_721536.1                                  YWDVETVRGNSALYSSQHFL---AENKEWETHLIAWTGELINKKKDTSSLTADTLQDDPL 112
tr|A0A090N4I6|A0A090N4I6_OSTTA               AYAFEADESIYDQCREGALKGG---QFEVVINVGQLPMEVPM--E--------MQ---- 112
AtTPS5_AT4G17770.1                           KLSFSWDNDSLLLQLKDGMR------EDMEVVYIGCLKEQIDT--V--------EQ---- 119
AtTPS6_AT1G68020.2                           GWNFSWDENSLLLQLKDGLG-----DEAIEVIYVGCLKEEIPL--N--------EQ---- 127
OsTPS4_LOC_Os03g12360.1                      PWTFSWDEDSLLRHLQH-----SSSSPAMEFIYIGCLRDDIPL--A--------DQ---- 121
ZmTPSII.2.2_GRMZM2G099860_T01                PWTFEWDEDSLLRHLHH-----S-SSPLMEFIYIGCLRDDIPQ--A--------EQ---- 117
SCA1_2|Sh_203E09_p000020                     ------------------------MEFIYIGCLRDDIPQ--A--------EQ---- 18
SAC2_1|SUGdenovo0315072.p1                   PWTFEWDEDSLLRHLHH-----S-SSPLMEFIYIGCLRDDIPQ--A--------EQ---- 117
SCA3|SP803280_c117830_g1_i1_m.154722         PWTFEWDEDSLLRHLH------HSSSPLMEFIYIGCLRDDIPQ--A--------EQ---- 117
OsTPS10_LOC_Os09g23350.1                     GWEFSWDEDSLLLQLRDSLRAHADRADDMEFVYVGGLRDDVPA--A--------EH---- 140
ZmTPSII.2.1_GRMZM2G019183_T02                GWDFAWDQDSLLLQVKDSLRAHHGRA-DVEFVYVGGLRDDVPP--A--------EH---- 130
AtTPS7_AT1G06410.1                           SWSFSWDQDSLYLQLKDGLP------EDMEILYVGSLSVDVDS--N--------EQ---- 117
OsTPS3_LOC_Os01g53000.1                      GWSFCWDEDSLLLHLRDGLP------DDMEVLYVGSLRADVPS--A--------EQ---- 137
OsTPS6_LOC_Os05g44100.1                      GWAFSWDDDSLLLRLRDGVP------DEMEVLFIGTLRADVPA--C--------EQ---- 135
OsTPS2_LOC_Os01g54560.1                      GWSFSWDDDSLLLQLRDGIP------DEMEVFFVGSLRAEIPV--A--------DQ---- 138
ZmTPSII.3.3_GRMZM2G118462_T01                GWSFVWDDDSLLLQLRDGIP------EDMEVLFVGSLRADVPV--A--------EQ---- 140
SCA2_1|c95057f1p13337.p1                     GWSFSWDDDSLLLQLRDGIP------DEMEVHFVGSLRADVPV--S--------EQ---- 102
SCA4|evm.model.SCSP803280_000001563.1        GWSFSWDDDSLLLQLRDGIP------DEMEVHFVGSLRADVPV--S--------EQ---- 137
ZmTPSII.3.1_GRMZM2G304274_T01                GWSFSWDDDSLLLQLRDGIP------DEMEVLFVGSLRADVPA--A--------EQ---- 137
ZmTPSII.3.2_GRMZM2G123277_T01                GWSFSWDGDSLLLQLRDGIP------DEMEVLFVGSLRADVPA--A--------EQ---- 137
AtTPS11_AT2G18700.1                          KWCFEFDNDSLYLQLKDGFP------PETEVVYVGSLNADVLP--S--------EQ---- 110
OsTPS7_LOC_Os08g31980.1                      QWSFSRDDDALLMQLKDGFS------NETDVIYVGSLKVQVDP--S--------EQ---- 117
ZmTPSII.4.3_GRMZM2G366659_T01                ELSFSLDHDSLLMQLKDGFS------NETDAVYVGSLKVHVDP--R--------EQ---- 117
SCA2_1|c94760f1p43082.p1                     KLSFSLDHDALLVQLKDGFS------NETDAVYVGSLKVQVDP--S--------EQ---- 117
ZmTPSII.4.2_GRMZM2G008226_T01                VLSFSLDHDALLMQLKDSFS------NETDVVYVGSLKVQVDP--G--------EQ---- 117
OsTPS11_LOC_Os09g20990.1                     QWSFSMDDNQLLVQLKDGFP------MESEVVYVGSLNAEVDP--G--------EQ---- 118
ZmTPSII.4.1_GRMZM2G527891_T01                EWSFAMDDNQLLVQLKDGFP------IGNEVIYVGSLNVQVDP--I--------EQ---- 119
AtTPS10_AT1G60140.1                          KWKFSLDNDSPLLHLKDGFS------PETEVIYVGSLKTHVDV--S--------EQ---- 119
AtTPS8_AT1G70290.1                           KWCFNWDEDSLQLQLRDGFS------SETEFLYVGSLNVDIET--N--------EQ---- 117
AtTPS9_AT1G23870.1                           QWCFSWDEDSLLLQLRDGFS------SDTEFVYIGSLNADIGI--S--------EQ---- 119
OsTPS9_LOC_Os09g25890.1                      GFAFSLSADAHALQLSHGLG------L-AHVVFVGTLPAEAARALR--------RS---- 109
OsTPS5_LOC_Os02g54820.1                      GFSFTVDSDAVAYQLRSGLP------PGAPVLHIGTLPPPATE--A--------AS---- 110
ZmTPSII.5.3_GRMZM2G312521_T01                GFRFSVDAGTVAYQLRSGLP------TNAPVLHIGTLPASAAE--A--------AS---- 241
ZmTPSII.5.4_GRMZM2G122231_T01                GFAFSVDAGTVAYQLRSGLP------ANAPVLHIGTLPAAAAE--A--------AS---- 110
OsTPS8_LOC_Os08g34580.1                      GFDFSLDPHALPLQLSHGVP------R--PVVFVGVLPSAVAEAVQ--------AS---- 84
ZmTPSII.5.1_GRMZM2G007736_T02                GFDFSLDADALPLQLARGLP------R--PVVFVGALPSAAA-SIS--------AS---- 209
ZmTPSII.5.2_GRMZM2G079928_T01                GFDFSLDADALPLQCTRGLP------R--PVVFVGALPSAAA-SIS--------ES---- 120
CAA48913.1                                   --EHAASAGGLAVGILGAL-------KAAGGLWFGWSGETGNEDQPL------------- 53
XP_028127761.1                               ALFRKASAGGLVTAVAPVV-------INGGGLWVGWPGIHLDDPNEP--IPESDPN---- 80
ART29424.1                                   KLVRKASAGGLVTAVAPVV-------INGNGLWVGWPGIHLQDPHEA--IPESDPD---- 73
pdb|5HUU|B                                   SYDYSMSSGGLVTALQGLK-------KTTEFQWYGWPGLEIPEDEQT------------- 63
tr|Q01GJ2|Q01GJ2_OSTTA                       TWDVRPSAGGLVSALLGVR-------KTYGMTWIGWPGIFIEPGPER------------- 201
AtTPS1_AT1G78580.1                           SWSLEISAGGLVSALLGVK--------EFEARWIGWAGVNVPDEVGQ------------- 150
OsTPS1_LOC_Os05g44210.1                      QWSLEISAGGLVSALLGVK--------DVDAKWIGWAGVNVPDEVGQ------------- 186
ZmTPSI.1.1_GRMZM2G068943_T02                 HWSLEISAGGLVSALLGVK--------DVDAKWIGWAGVNVPDEVGQ------------- 172
SCA3|SP803280_c107577_g2_i1_m.97794          QWSLEISAGGLVSALLGVK--------DVDAKWIGWAGVNVPDEVGQ------------- 186
SCA1_2|Sh_239M11_p000040                     QWSLEISAGGLVSALLGVK--------DVDAKWIGWAGVNVPDEVGQ------------- 187
ZmTPSI.1.2_GRMZM2G001304_T01                 ------------------------------------------------------------ 0
AtTPS4_AT4G27550.1                           SWSFTMSPGGLVSALLGLK--------EFETKWIGWPGVDVHDAIGK------------- 62
AtTPS2_AT1G16980.1                           SWSLEMSPGGLVSGLLGIT-------SQFDTKWVGWPGVDVHDEIEK------------- 70
AtTPS3_AT1G17000.1                           SWSLEMSPGGKFNLL----------------------------VEK------------- 48
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G22 W41

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tr|Q00WH8|Q00WH8_OSTTA                       ------------------------------------------------------------ 0
SCA5|SCEZRZ3019C12.g.p1                      ------------------------------------------------------------ 0
SCA3|SP803280_c110556_g1_i2_m.112799         ------------------------------------------------------------ 0
SCA1_2|Sh_210F11_p000130                     ------------------------------------------------------------ 0
SCA3|SP803280_c104339_g1_i3_m.83754          ------------------------------------------------------------ 0
SCA4|evm.model.SCSP803280_000048991.1        ------------------------------------------------------------ 0
SCA3|SP803280_c109234_g1_i4_m.105886         ------------------------------------------------------------ 0
SCA3|SP803280_c102057_g1_i4_m.74365          ------------------------------------------------------------ 0
SAC2_1|SUGdenovo0588378.p1                   ------------------------------------------------------------ 0
5DXF_1|Chains                                YLDEEDKSKIEKKLCDASGTPNIHPVWLLRR-DQGRWRKYAENVLWPVFHYIQGQPSD-- 169
XP_721536.1                                  YLDEEDKSKIEKKLCDASGTPNIHPVWLLRR-DQGRWRKYAENVLWPVFHYIQGQPSD-- 169
tr|A0A090N4I6|A0A090N4I6_OSTTA               ----------DAVANDLERRYNCMPVFLPKEVKENFYNGFCKQYMWPLMHYVLPMSPM-- 160
AtTPS5_AT4G17770.1                           ----------DDVSQRLLENFKCVPAYIPPELFTKYYHGFCKQHLWPLFHYMLPLTPD-- 167
AtTPS6_AT1G68020.2                           ----------EEVYQILLESFKCVPTFLPLDLYTRYYHGFCKQQLWPLFHYMLPLSPD-- 175
OsTPS4_LOC_Os03g12360.1                      ----------DAVAQALLESYNCVPAFLPPDIAERYYHGFCKQHLWPLFHYMLPLSPD-- 169
ZmTPSII.2.2_GRMZM2G099860_T01                ----------DAVAQALLETHNCVPAFLPTDIAERYYHGFCKQHLWPLFHYMLPLSPD-- 165
SCA1_2|Sh_203E09_p000020                     ----------DAVAQALLETHNCVPAFLPTDIAERYYHGFCKQHLWPLFHYMLPLSPD-- 66
SAC2_1|SUGdenovo0315072.p1                   ----------DAVAQALLETHNCVPAFLPTDIAERYYHGFCKQHLWPLFHYMLPLSPD-- 165
SCA3|SP803280_c117830_g1_i1_m.154722         ----------DAVAQALLETHNCVPAFLPTDIAERYYHGFCKQQLWPLFHYMLPLSPE-- 165
OsTPS10_LOC_Os09g23350.1                     ----------DEVAHHLLEGFRCVPTFLPADLRSRFYHGFCKQQLWPLFHYMLPLSPE-- 188
ZmTPSII.2.1_GRMZM2G019183_T02                ----------DQVAHDLLEGFRCVPTFLPADLRSRFYHGFCKQQLWPLFHYMLPLSPE-- 178
AtTPS7_AT1G06410.1                           ----------DDVAQILLDKFKCVPTFFPPDLQSKFYDGFCKRQIWPLFHYMLPFSAD-- 165
OsTPS3_LOC_Os01g53000.1                      ----------DDVAQALLDRFRCVPAFLPKDVLDRFYHGFCKQTLWPLFHYMLPFTSD-- 185
OsTPS6_LOC_Os05g44100.1                      ----------DEVSQSLIDGFGCAPVFLPAGLYDRFYQHFCKGYLWPLFHYMLPFASA-- 183
OsTPS2_LOC_Os01g54560.1                      ----------EEVSQALLDRFRCAPVFLPDPLNERFYHRFCKRHLWPLFHYMLPFSSSAS 188
ZmTPSII.3.3_GRMZM2G118462_T01                ----------DEVSQALLDRFRCAPVFLPDRLNDRFYHGFCKRQLWPLFHYMLPFSSSAS 190
SCA2_1|c95057f1p13337.p1                     ----------DEVSQALLDRFRCAPVFLPDHLNDRFYHGFCKRQLWPLFHYMLPFSSSAS 152
SCA4|evm.model.SCSP803280_000001563.1        ----------DEVSQALLDRFRCAPVFLPDHLNDRFYHGFCKRQLWPLFHYMLPFSSSAS 187
ZmTPSII.3.1_GRMZM2G304274_T01                ----------DAVSQALLDRFRCAPVFLPDHLNDRFYHGFCKRQLWPLFHYMLPFSSPAS 187
ZmTPSII.3.2_GRMZM2G123277_T01                ----------DEVSQTLLDRFRCAPVFLPDHLNDRFYHGFCKRQLWPLFHYMLPFSSPAS 187
AtTPS11_AT2G18700.1                          ----------EDVSQFLLEKFQCVPTFLPSDLLNKYYHGFCKHYLWPIFHYLLPMTQA-- 158
OsTPS7_LOC_Os08g31980.1                      ----------DQVAQKLLRDYRCIPTFLPPDLQQQFYHGFCKQQLWPLFHYMLPICLD-- 165
ZmTPSII.4.3_GRMZM2G366659_T01                ----------DQVAQKLLREYRCIPTFLPSDLQQQFYHGFCKQQLWPLFHYMLPICLD-- 165
SCA2_1|c94760f1p43082.p1                     ----------DQVAQKLLREYRCIPTFLPSDLQQQFYHGFCKQQLWPLFHYMLPICLD-- 165
ZmTPSII.4.2_GRMZM2G008226_T01                ----------DQVAQKLLREYRCIPTFLPSDLQQQFYHGFCKQQLWPLFHYMLPICLD-- 165
OsTPS11_LOC_Os09g20990.1                     ----------DQLSQKLFREYKCIPTFLPADLQQQFYHGFCKQQLWPLFHYMLPICLD-- 166
ZmTPSII.4.1_GRMZM2G527891_T01                ----------DRVSQKLFKEHRCVPTFLPAELQHQFYHIFCKQHLWPLFHYMLPVCHD-- 167
AtTPS10_AT1G60140.1                          ----------DEVSHNLFEEFNCVATFLPQDVHKKFYLGFCKQQLWPLFHYMLPMCPD-- 167
AtTPS8_AT1G70290.1                           ----------EEVSQKLLEEFNCVATFLSQELQEMFYLGFCKHQLWPLFHYMLPMFPD-- 165
AtTPS9_AT1G23870.1                           ----------EEVSHKLLLDFNCVPTFLPKEMQEKFYLGFCKHHLWPLFHYMLPMFPD-- 167
OsTPS9_LOC_Os09g25890.1                      ----------DELDRHLLGCFSCLPVFLPPRAHDEFYAGFCKHYLWPRLHYLLPHAPAA- 158
OsTPS5_LOC_Os02g54820.1                      ----------DELCNYLLANFSCLPVYLPADLHRRFYHGFCKHYLWPLLHYLLPLTPSS- 159
ZmTPSII.5.3_GRMZM2G312521_T01                ----------DELSNYLLANFSCLPVYLPTDLHHRFYHGFCKHYLWPLLHYLLPLTPSS- 290
ZmTPSII.5.4_GRMZM2G122231_T01                ----------DELSDYLLANFSCLPVYLPTDLHHRFYHGFCKHYLWPLLHYLLPLTPSS- 159
OsTPS8_LOC_Os08g34580.1                      ----------DELAADLLARFSCYLVFLPAKLHADFYDGFCKHYMWPHLHYLLPLAP-S- 132
ZmTPSII.5.1_GRMZM2G007736_T02                ----------EELEADLLARFGCSPVFLDPGLHKDFYDGFCKRYLWPMLHYLLPFTLTP- 258
ZmTPSII.5.2_GRMZM2G079928_T01                ----------DDLAADLFTRFACSPVFLDPSLHNDFYNSFCKRYLWPILQLQYLLPFTR- 169
CAA48913.1                                   -----------KKVK--KGNITWASFNLSEQDLDEYYNQFSNAVLWPAFHYRLDLVQF-- 98
XP_028127761.1                               ----------DITPTAGLKSEKVVAVHVDPTIFDAYYNGCCNATFWPLFHSMPDRASF-- 128
ART29424.1                                   ----------DVTPTAGLKSDKVVAVQIDPAVFDSYYNGCCNATFWPLFHSMPDRANF-- 121
pdb|5HUU|B                                   -----------KVNDELKSKFNCTAIFLSDTIADLHYNGFSNSILWPLFHYHPGEMNF-- 110
tr|Q01GJ2|Q01GJ2_OSTTA                       -----------DSLTATLRRQNLLPVYLTKSQVELYYNGYCNNVLWSLFHYVPLNFEAR- 249
AtTPS1_AT1G78580.1                           -----------KALSKALAEKRCIPVFLDEEIVHQYYNGYCNNILWPLFHYLGLPQEDR- 198
OsTPS1_LOC_Os05g44210.1                      -----------RALTRALAEKRCIPVFLDEEIVHQYYNGYCNNILWPLFHYLGLPQEDR- 234
ZmTPSI.1.1_GRMZM2G068943_T02                 -----------RALTKALAEKRCIPVFLDEEIVHQYYNGYCNNILWPLFHYLGLPQEDR- 220
SCA3|SP803280_c107577_g2_i1_m.97794          -----------RALTKALAEKRCIPVFLDEEIVHQYYNGYCNNILWPLFHYLGLPQEDR- 234
SCA1_2|Sh_239M11_p000040                     -----------RALTKALAEKRCIPVFLDEEIVHQYYNGYCNNILWPLFHYLGLPQEDR- 235
ZmTPSI.1.2_GRMZM2G001304_T01                 ------------------------------------------------------------ 0
AtTPS4_AT4G27550.1                           -----------KTLSITLAEKGCIPVFLEE-VCDQYYNGYCNNILWPIFHYLGTPPEYR- 109
AtTPS2_AT1G16980.1                           -----------NALTESLAEMKCIPVFLNG-VFDQYYNGYCNGILWPILHHMGLPQEDQ- 117
AtTPS3_AT1G17000.1                           -----------DAVSKSLAEMKCIPVFLNE-VFDQYYNGYSNGILWPILHHMGLPQEYD- 95
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Y76 W85

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tr|Q00WH8|Q00WH8_OSTTA                    ------------------------------------------------------------ 0
SCA5|SCEZRZ3019C12.g.p1                   ------------------------------------------------------------ 0
SCA3|SP803280_c110556_g1_i2_m.112799      ------------------------------------------------------------ 0
SCA1_2|Sh_210F11_p000130                  ------------------------------------------------------------ 0
SCA3|SP803280_c104339_g1_i3_m.83754       ------------------------------------------------------------ 0
SCA4|evm.model.SCSP803280_000048991.1     ------------------------------------------------------------ 0
SCA3|SP803280_c109234_g1_i4_m.105886      ------------------------------------------------------------ 0
SCA3|SP803280_c102057_g1_i4_m.74365       ------------------------------------------------------------ 0
SAC2_1|SUGdenovo0588378.p1                ------------------------------------------------------------ 0
5DXF_1|Chains                             -------------------GKAETDAWHDYVKFNEAYLNKIKSV--------YKPGDIIW 202
XP_721536.1                               -------------------GKAETDAWHDYVKFNEAYLNKIKSV--------YKPGDIIW 202
tr|A0A090N4I6|A0A090N4I6_OSTTA            ------------------DARFETHQWQAYIASNKRFADKLMETVS------SDD-DLVW 195
AtTPS5_AT4G17770.1                        -----------------LGGRFDRSLWQAYLSVNKIFADKVMEVIS------PDD-DFVW 203
AtTPS6_AT1G68020.2                        -----------------LGGRFDRTLWQAYVSVNKIFADRIMEVIN------PED-DFVW 211
OsTPS4_LOC_Os03g12360.1                   -----------------LGGRFDRALWQSYVSANKIFADKVLEVIN------PDD-DFVW 205
ZmTPSII.2.2_GRMZM2G099860_T01             -----------------LGGRFDRALWQAYVSANKIFADKVLEVIN------PDD-DFVW 201
SCA1_2|Sh_203E09_p000020                  -----------------LGGRFDRALWQGYVSANKIFADKVLEVIN------PDD-DFVW 102
SAC2_1|SUGdenovo0315072.p1                -----------------LGGRFDRALWQGYVSANKIFADKVLEVIN------PDD-DFVW 201
SCA3|SP803280_c117830_g1_i1_m.154722      -----------------LGGRFDRLLWQAYVSVNKIFADKILEVIS------PDE-DFVW 201
OsTPS10_LOC_Os09g23350.1                  -----------------LGGRFDRALWQAYVSVNKIFADKILEVIS------PDE-DYVW 224
ZmTPSII.2.1_GRMZM2G019183_T02             -----------------LGGRFDRLLWQAYVSVNKIFADKILEVIS------PDE-DFVW 214
AtTPS7_AT1G06410.1                        -----------------HGGRFDRSLWEAYVATNKLFFQKVIEVIN------PDD-DFVW 201
OsTPS3_LOC_Os01g53000.1                   -----------------HGGRFDRSQWEAYVLANKLFSQRVIEVLN------PED-DYIW 221
OsTPS6_LOC_Os05g44100.1                   -----------LPAAASGDGRFDRGAWEAYVLANKYFFEKVVEVIN------PED-DYVW 225
OsTPS2_LOC_Os01g54560.1                   PSPSSSSSSSSSPSSSSGSGHFDRGAWEAYVLANKFFFEKVVEVIN------PED-DYVW 241
ZmTPSII.3.3_GRMZM2G118462_T01             AAGTTS--SSS---AATCNGRFDRSAWEAYVLANKFFFEKVVEVIN------PED-DYVW 238
SCA2_1|c95057f1p13337.p1                  --AATT--SSSIATSSPGNGRFDRSAWEAYVLANKFFFEKVVEVIN------PEE-DYVW 201
SCA4|evm.model.SCSP803280_000001563.1     --AATT--SSSIATSSPGNGRFDRSAWEAYVLANKFFFEKVVEVIN------PEE-DYVW 236
ZmTPSII.3.1_GRMZM2G304274_T01             ASAAAT--SSSVATSSPGNGCFDRSAWEAYVLANKFFFEKVVEVIN------PED-DYVW 238
ZmTPSII.3.2_GRMZM2G123277_T01             ASAAAT--SSSVATSSPGNGRFDRSAWEAYVLANKFFFEKVVEVIN------PED-DYVW 238
AtTPS11_AT2G18700.1                       -----------------QGSLFDRSNWRAYTTVNKIFADKIFEVLN------PDD-DYVW 194
OsTPS7_LOC_Os08g31980.1                   -----------------KGELFDRSLFQAYVRANKLFADKVMEAIN------TDD-DHVW 201
ZmTPSII.4.3_GRMZM2G366659_T01             -----------------KGELFDRTLFQAYVRANKLFADKVMEAIN------TDD-DYVW 201
SCA2_1|c94760f1p43082.p1                  -----------------KGELFDRNLFQAYVRANKLFADKVMEAIN------TDD-DCVW 201
ZmTPSII.4.2_GRMZM2G008226_T01             -----------------KGELFDRSLFQAYVRANKLFADKVMEAIN------ADD-DFVW 201
OsTPS11_LOC_Os09g20990.1                  -----------------KGELFDRSLFQAYVRANKIFGDKVMEAIN------SDD-DCVW 202
ZmTPSII.4.1_GRMZM2G527891_T01             -----------------KDELFDRSLFQAYVRANKIFADKIVEAVN------SDD-DCVW 203
AtTPS10_AT1G60140.1                       -----------------HGERFDRGLWQAYVSANKIFADKVMGVIN------LEE-DYIW 203
AtTPS8_AT1G70290.1                        -----------------HGDRFDRRLWQAYVSANKIFSDRVMEVIN------PED-DYVW 201
AtTPS9_AT1G23870.1                        -----------------HGDRFDRRLWQAYVSANKIFSDRVMEVIN------PEE-DYVW 203
OsTPS9_LOC_Os09g25890.1                   ----------------NGYLHFDAGLYRSYASANRSFAARVVEVLS------PDDGDLVF 196
OsTPS5_LOC_Os02g54820.1                   ----------------LGGLPFDRALYHSFLSANRAFADRLTEVLS------PDD-DLVW 196
ZmTPSII.5.3_GRMZM2G312521_T01             ----------------LGGLPFQRTLYHSFLSANRAFADRLTEVLS------PDE-DLVW 327
ZmTPSII.5.4_GRMZM2G122231_T01             ----------------LGGLPFQRTLYHSFLSANRAFADRLTEVLC------PDE-DLVW 196
OsTPS8_LOC_Os08g34580.1                   -------------YGRGGGLPFNGDLYRAFLTVNTHFAERVFELLN------PDE-DLVF 172
ZmTPSII.5.1_GRMZM2G007736_T02             -------------FFGSGGLKFKANLYRAYLTANTQYAERVLEQLN------PDE-DLVF 298
ZmTPSII.5.2_GRMZM2G079928_T01             -------------SSDSGCLSFNEDLYRAYLTANTQYADRVFEHLN------TDE-DLVL 209
CAA48913.1                                ----------------------QRPAWDGYLRVNALLADKLLPL--------LQDDDIIW 128
XP_028127761.1                            ----------------------KAEYWRAYLKANEAFAECTLKALKTLPKT-STEIPLIW 165
ART29424.1                                ----------------------MREHWQCYTQANKEFADCTMAALRSLPKKTGNGVPLIW 159
pdb|5HUU|B                                ---------------------DENAWAAYIEANKKFALEIVKQ--------VNDDDMIW 140
tr|Q01GJ2|Q01GJ2_OSTTA                    ----------------LNQETNMTAQWVAYKEANRVFADAIMSV--------YRDGDIVW 285
AtTPS1_AT1G78580.1                        ----------------LATTRSFQSQFAAYKKANQMFADVVNEH--------YEEGDVVW 234
OsTPS1_LOC_Os05g44210.1                   ----------------LATTRNFESQFNAYKRANQMFADVVYQH--------YKEGDVIW 270
ZmTPSI.1.1_GRMZM2G068943_T02              ----------------LATTRNFESQFDAYKRANQMFADVVYEH--------YQDGDVIW 256
SCA3|SP803280_c107577_g2_i1_m.97794       ----------------LATTRNFESQFDAYKRANQMFADVVYQH--------YQEGDVIW 270
SCA1_2|Sh_239M11_p000040                  ----------------LATTRNFESQFDAYKRANQMFADVVYQH--------YQEGDVIW 271
ZmTPSI.1.2_GRMZM2G001304_T01              ------------------------------------------------------------ 0
AtTPS4_AT4G27550.1                        ----------------NDATITYQSQYEAYKKANQIFFDVVKEH--------YEEGDVVW 145
AtTPS2_AT1G16980.1                        ----------------HDTNQTFETQYDAYKKANRMFLDVIIDN--------YEEGDIVW 153
AtTPS3_AT1G17000.1                        ----------------HDTIKTFETQYDAYKKANRMFLDVIKEN--------YKDGDIVW 131


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SCA1_2|Sh_210F11_p000130                  ------------------------------------------------------------ 0
SCA3|SP803280_c104339_g1_i3_m.83754       ------------------------------------------------------------ 0
SCA4|evm.model.SCSP803280_000048991.1     ------------------------------------------------------------ 0
SCA3|SP803280_c109234_g1_i4_m.105886      ------------------------------------------------------------ 0
SCA3|SP803280_c102057_g1_i4_m.74365       ------------------------------------------------------------ 0
SAC2_1|SUGdenovo0588378.p1                ------------------------------------------------------------ 0
5DXF_1|Chains                             IHDYYLLLLPQLLRME----FPNAYIGFFLHVPFPSSEYFRCLSKRSQLLDGMLGADKIG 258
XP_721536.1                               IHDYYLLLLPQLLRME----FPNAYIGFFLHVPFPSSEYFRCLSKRSQLLDGMLGADKIG 258
tr|A0A090N4I6|A0A090N4I6_OSTTA            VNDYHLMLLPTFLRKR----FNAVKCGFFLHCPFPSSEIFRTTPTRDLILRGLLNADFVG 251
AtTPS5_AT4G17770.1                        VHDYHLMVLPTFLRKR----FNRVKLGFFLHSPFPSSEIYRTLPVRNELLRALLNADLIG 259
AtTPS6_AT1G68020.2                        IHDYHLMVLPTFLRKR----FNRVKLGFFLHSPFPSSEIYKTLPIREELLRALLNSDLIG 267
OsTPS4_LOC_Os03g12360.1                   VHDYHLMVLPTFLRKR----FNRIKLGFFLHSPFPSSEIYKTLPVREELLRALLNSDLIG 261
ZmTPSII.2.2_GRMZM2G099860_T01             VHDYHLMVLPTFLRKR----FNRIKLGFFLHSPFPSSEIYKTLPVREELLRALLNSDLIG 257
SCA1_2|Sh_203E09_p000020                  VHDYHLMVLPTFLRKR----FNRIKLGFFLHSPFPSSEIYKTLPVREELLRALLNSDLIG 158
SAC2_1|SUGdenovo0315072.p1                VHDYHLMVLPTFLRKR----FNRIKLGFFLHSPFPSSEIYKTLPVREELLRALLNSDLIG 257
SCA3|SP803280_c117830_g1_i1_m.154722      VHDYHLMVLPTFLRKR----FNRVKLGFFLHSPFPSSEIYKTLPVREELLRSLLNADLIG 257
OsTPS10_LOC_Os09g23350.1                  VHDYHLMILPTFLRKR----FNRVKLGFFLHSPFPSSEIYKTLPVREELLRSLLNADLIG 280
ZmTPSII.2.1_GRMZM2G019183_T02             VHDYHLMVLPTFLRKR----FNRVKLGFFLHSPFPSSEIYKTLPVREELLRSLLNADLIG 270
AtTPS7_AT1G06410.1                        IHDYHLMVLPTFLRRR----FNRIRMGFFLHSPFPSSEIYRSLPVREEILKALLNSDLIG 257
OsTPS3_LOC_Os01g53000.1                   IHDYHLLALPSFLRRR----FNRLRIGFFLHSPFPSSELYRSLPVRDEILKSLLNCDLIG 277
OsTPS6_LOC_Os05g44100.1                   VHDYHLMALPTFLRRR----FNRLRIGFFLHSPFPSSEIYRSLPVREEILRTLLNCDLIG 281
OsTPS2_LOC_Os01g54560.1                   VHDYHLMALPTFLRRR----FNRLRIGFFLHSPFPSSEIYRTLPVREEILKALLNCDLIG 297
ZmTPSII.3.3_GRMZM2G118462_T01             VHDYHLMALPTFLRRC----FNRLRIGFFLHSPFPSSEIYRTLPVREEILKALLNCDLIG 294
SCA2_1|c95057f1p13337.p1                  VHDYHLMALPTFLRRR----FNRLRIGFFLHSPFPSSEIYRTLPVREEILKALLNCDLIG 257
SCA4|evm.model.SCSP803280_000001563.1     VHDYHLMALPTFLRRR----FNRLRIGFFLHSPFPSSEIYRTLPVREEILKALLNCDLIG 292
ZmTPSII.3.1_GRMZM2G304274_T01             VHDYHLLALPTFLRRR----FNRLRIGFFLHSPFPSSEIYRTLPVRDEILKALLNCDLIG 294
ZmTPSII.3.2_GRMZM2G123277_T01             VHDYHLLALPTFLRRR----FNRLRIGFFLHSPFPSSEIYRTLPVRDEILKALLNCDLIG 294
AtTPS11_AT2G18700.1                       IHDYHLMILPTFLRNR----FHRIKLGIFLHSPFPSSEIYRTLPVRDEILKGFLNCDLVG 250
OsTPS7_LOC_Os08g31980.1                   VHDYHLMLLPTFLRKR----LHRIKLGFFLHSPFPSSEIYRSLPVRDEILKSLLNADLIG 257
ZmTPSII.4.3_GRMZM2G366659_T01             VHDYHLMLLPTFLRKR----LHRIKIGFFLHSPFPSSEIYRTLPVRDEILKSLLNADLIG 257
SCA2_1|c94760f1p43082.p1                  VHDYHLMLLPTFLRKR----LHRIKIGFFLHSPFPSSEIYRTLPVRDEILKSLLNADLIG 257
ZmTPSII.4.2_GRMZM2G008226_T01             VHDYHLMLLPTFLRKR----LHRIKIGFFLHSPFPSSEIYRTLPVRDEILKSLLNADLIG 257
OsTPS11_LOC_Os09g20990.1                  VHDYHLMLLPTFLRKK----LHRIKIGFFLHSPFPSSEIYRTLPVRDEILKSLLNADLIG 258
ZmTPSII.4.1_GRMZM2G527891_T01             VHDYHLMLIPTLLRKK----LHRIKVGFFLHSPFPSSEIYRTLPVRDEILKSLLNADLIG 259
AtTPS10_AT1G60140.1                       IHDYHLMVLPTFLRRR----FHRVKLGFFLHSPFPSSEIYRTLPVREELLRGLLNCDLIG 259
AtTPS8_AT1G70290.1                        IQDYHLMVLPTFLRKR----FNRIKLGFFLHSPFPSSEIYRTLPVRDDLLRGLLNCDLIG 257
AtTPS9_AT1G23870.1                        IHDYHLMVLPTFLRKR----FNRIKLGFFLHSPFPSSEIYRTLPVRDDLLRGLLNCDLIG 259
OsTPS9_LOC_Os09g25890.1                   VHDYHLWLLPSFLRRG----CPRCRVGFFLHSPFPSAEVFRSIPVREDLLRALLNADLVG 252
OsTPS5_LOC_Os02g54820.1                   IHDYHLLALPTFLRKR----FPRAKVGFFLHSPFPSSEIFRTIPVREDLLRALLNADLVG 252
ZmTPSII.5.3_GRMZM2G312521_T01             IHDYHLLALPTFLRKR----FPRAKVGFFLHSPFPSSEIFRTIPVRDDLVRALLNADLVG 383
ZmTPSII.5.4_GRMZM2G122231_T01             IHDYHLLALPTFLRKR----FPRAKVGFFLHSPFPSSEIFRTIPVRDDLVRALLNADLVG 252
OsTPS8_LOC_Os08g34580.1                   VHDYHLWAFPTFLRHK----SPRARIGFFLHSPFPSSELFRAIPVREDLLRALLNADLVG 228
ZmTPSII.5.1_GRMZM2G007736_T02             IHDYHLLALPTILRHK----SPRARIGFFLHTPFPTSELFRTVPVREDLLRSLLNADLVG 354
ZmTPSII.5.2_GRMZM2G079928_T01             IHDYHLFALPTILRRK----SPRARIGFFLHSPFPTSELFRAIPVREELLRALLNADLVG 265
CAA48913.1                                IHDYHLLPFAHELRKR----GVNNRIGFFLHIPFPTPEIFNALPTYDTLLEQLCDYDLLG 184
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XP_028127761.1                                  VHDYHLMLAANWIRQAADEQEIKVKLGFFLHIPFPPWDIYRLFPWADEILQGMLGCDLVG 225
ART29424.1                                      IHDYHLMLAANWIRQGAEDEGIACKLGFFLHIPFPPWDIFRLFPWSDEILQGMLACDMVG 219
pdb|5HUU|B                                      VHDYHLMLLPEMLRQEIGNKKKNIKIGFFLHTPFPSSEIYRILPVRKEILEGVLSCDLIG 200
tr|Q01GJ2|Q01GJ2_OSTTA                          AHDYHLMLVPEMLRQD----VETMKIGWFLHTPFPSSEIYRMLPMREALLHGCLAADLVG 341
AtTPS1_AT1G78580.1                              CHDYHLMFLPKCLKEY----NSKMKVGWFLHTPFPSSEIHRTLPSRSELLRSVLAADLVG 290
OsTPS1_LOC_Os05g44210.1                         CHDYHLMFLPKCLKDH----DINMKVGWFLHTPFPSSEIYRTLPSRSELLRSVLCADLVG 326
ZmTPSI.1.1_GRMZM2G068943_T02                    CHDYHLMFLPKCLKDH----DINMKVGWFLHTPFPSSEIYRTLPSRLELLRSVLCADLVG 312
SCA3|SP803280_c107577_g2_i1_m.97794             CHDYHLMFLPKCLKDH----DINMKVGWFLHTPFPSSEIYRTLPSRLELLRSVLCADLVG 326
SCA1_2|Sh_239M11_p000040                        CHDYHLMFLPKCLKDH----DINMKVGWFLHTPFPSSEIYRTLPSRLELLRSVLCADLVG 327
ZmTPSI.1.2_GRMZM2G001304_T01                    ------------------------------------------------------------ 0
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AtTPS2_AT1G16980.1                              CHDYHLMFLPQYLKEY----NNKIKVGWFLHSPFPSSEVYKTLPSRSELLRAILAADLLG 209
AtTPS3_AT1G17000.1                              CQDYHLMFLPQYLKEY----NNKIKVGWFLHSPFPSSEIYKTLPSRSELLRSVLAADLIS 187
                                                D130                        H154     E171

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SCA1_2|Sh_210F11_p000130                        ------------------------------------------------------------ 0
SCA3|SP803280_c104339_g1_i3_m.83754             ------------------------------------------------------------ 0
SCA4|evm.model.SCSP803280_000048991.1           ------------------------------------------------------------ 0
SCA3|SP803280_c109234_g1_i4_m.105886            ------------------------------------------------------------ 0
SCA3|SP803280_c102057_g1_i4_m.74365             ------------------------------------------------------------ 0
SAC2_1|SUGdenovo0588378.p1                      ------------------------------------------------------------ 0
5DXF_1|Chains                                   FQSDSFQRHFISCCARVLGCEVN-----RDSVSAYGTTISVETLPIGIDTEKIEHDAFSS 313
XP_721536.1                                     FQSDSFQRHFISCCARVLGCEVN-----RDSVSAYGTTISVETLPIGIDTEKIEHDAFSS 313
tr|A0A090N4I6|A0A090N4I6_OSTTA                  FHTFDYARHFLSCCTRLLG-LNHRMERGSLVIDNHGRLVSVKICPTGVKISRLQQVLDTD 310
AtTPS5_AT4G17770.1                              FHTFDYARHFLSCCSRMLG-LSYQSKRGTIGLEYYGRTVSIKILPVGIHISQLQSILNLP 318
AtTPS6_AT1G68020.2                              FHTFDYARHFLSCCSRMLG-LTYESKRGYIGLEYYGRTVSIKILPVGIHMGQLQSVLSLP 326
OsTPS4_LOC_Os03g12360.1                         FHTFDYARHFLSCCGRMLG-LSYESKRGHICLEYYGRTVSIKILPVGVNMGQLKTVLALP 320
ZmTPSII.2.2_GRMZM2G099860_T01                   FHTFDYARHFLSCCGRMLG-LSYESKRGHICLEYYGRTVSIKILPVGVHMEQLKTVLGLP 316
SCA1_2|Sh_203E09_p000020                        FHTFDYARHFLSCCGRMLG-LSYESKRGHICLEYYGRTVSIKILPVGVHMEQLKTVLGLP 217
SAC2_1|SUGdenovo0315072.p1                      FHTFDYARHFLSCCGRMLG-LSYESKRGHICLEYYGRTVSIKILPVGVHMEQLKTVLGLP 316
SCA3|SP803280_c117830_g1_i1_m.154722            FHTFDYARHFLSCCSRMLG-LKYESQRGYIALEYYGRTVTIKILPVGVHLEQLQSVLNLP 316
OsTPS10_LOC_Os09g23350.1                        FHTFDYARHFLSCCGRMLG-LKYESQRGYIALEYYGRTVTIKILPVGVHLEQLRSVLNLP 339
ZmTPSII.2.1_GRMZM2G019183_T02                   FHTFDYARHFLSCCSRMLG-LKYESQRGYIALEYYGRTVTIKILPVGVHLEQLRSVLNLP 329
AtTPS7_AT1G06410.1                              FHTFDYARHFLTCCSRMLG-LEYQSKRGYIGLEYYGRTVGIKIMPVGINMGRIQSVMRYS 316
OsTPS3_LOC_Os01g53000.1                         FHTFDYARHFLSCCSRMLG-IEYQSKRGYIGLDYFGRTVGIKIMPVGINMTQLQTQIRLP 336
OsTPS6_LOC_Os05g44100.1                         FHTFDYARHFLSCCSRMLG-IEYQSKRGYIGLDYFGRTVGIKIMPVGIHMGQLQSVLRLS 340
OsTPS2_LOC_Os01g54560.1                         FHTFDYARHFLSCCSRMLG-IEYQSKRGYIGLDYFGRTVGIKIMPVGVHMGQLKTVLSLP 356
ZmTPSII.3.3_GRMZM2G118462_T01                   FHTFDYARHFLSCCSRMLG-IEYQSKRGYIELDYFGRTVGIKIMPVGVHMGQLELGLRLP 353
SCA2_1|c95057f1p13337.p1                        FHTFDYARHFLSCCSRMLG-IEYQSKRGYIGLDYFGRTVGIKIMPVGIHMGQLQSGLRLP 316
SCA4|evm.model.SCSP803280_000001563.1           FHTFDYARHFLSCCSRMLG-IEYQSKRGYIGLDYFGRTVGIKIMPVGIHMGQLQSGLRLP 351
ZmTPSII.3.1_GRMZM2G304274_T01                   FHTFDYARHFLSCCSRMLG-IEYQSKRGYIGLDYFGRTVGIKIMPVGVHMGQLESGLRLP 353
ZmTPSII.3.2_GRMZM2G123277_T01                   FHTFDYARHFLSCCSRMLG-IEYQSKRGHIGLDYFGRTVGIKIMPVGVHMGQLESGLRLP 353
AtTPS11_AT2G18700.1                             FHTFDYARHFLSCCSRMLG-LDYESKRGYIGLEYFGRTVSIKILPVGIHMGQIESIKASE 309
OsTPS7_LOC_Os08g31980.1                         FQTFDYARHFLSCCSRLLG-LHYESKRGYIGIDYFGRTVSLKILSVGVHVGRLESILKLP 316
ZmTPSII.4.3_GRMZM2G366659_T01                   FQTFDYARHFLSCCSRLLG-LHYESKRGYIGIEYFGRTVSLKILSVGVHVGRLESVLKLP 316
SCA2_1|c94760f1p43082.p1                        FQTFDYARHFLSCCSRLLG-LHYESKRGYIGIEYFGRTVSLKILSVGVHVGRLESVLKLP 316
ZmTPSII.4.2_GRMZM2G008226_T01                   FQTFDYARHFLSCCSRLLG-LHYESKRGYIGIEYFGRTVSLKILSVGVHIGRLESVLKLP 316
OsTPS11_LOC_Os09g20990.1                        FQTFDYARHFLSCCSRLLG-LNYESKRGHIGIEYFGRTVSLKILAVGVHVGRLESVLRLP 317
ZmTPSII.4.1_GRMZM2G527891_T01                   FQTFDYARHFLSCCSRLLG-LNYESKRGHIGIEYFGRTVSLKILAAGVHVGRLEATLRLP 318
AtTPS10_AT1G60140.1                             FHTFDYARHFLSCCCRMLG-LEYESKRGHIALDYLGRTVFLKILPIGIHMGRLESVLNLP 318
AtTPS8_AT1G70290.1                              FHTFDYARHFLSCCSRMLG-LDYESKRGHIGLDYFGRTVYIKILPVGVHMGRLESVLSLD 316
AtTPS9_AT1G23870.1                              FHTFDYARHFLSCCSRMLG-LDYESKRGHIGLDYFGRTVFIKILPVGIHMGRLESVLNLP 318
OsTPS9_LOC_Os09g25890.1                         FHTYDYARHFLSACSRLLG-LAYTSRHGRVGINYHGRTVLIKFLSVGVDMGLLRTAMASP 311
OsTPS5_LOC_Os02g54820.1                         FHTFDYARHFLSACSRLLG-LDYQSKRGYIGIEYYGRTVTVKILPVGIDMGQLRSVVSAP 311
ZmTPSII.5.3_GRMZM2G312521_T01                   FHTFDYARHFLSACSRLLG-LDYQSKRGYIGIEYYGRTVTVKILPVGIDMGQLRSVVSAP 442
ZmTPSII.5.4_GRMZM2G122231_T01                   FHTFDYARHFLTACSRLLG-LDYQSKRGYIGIEYYGRTVTVKILPVGIDMGQLRSVVSAP 311
OsTPS8_LOC_Os08g34580.1                         FHTFDYARHFLSACSRVLG-LSNRSRRGYIGIEYFGRTVVVKILSVGIDMGQLRAVLPLP 287
ZmTPSII.5.1_GRMZM2G007736_T02                   FHNYDYARHFLSACTRLLG-VTSHTHRGYISIDYCGRAVSVKILAGGVDIGQLREVLSSP 413
ZmTPSII.5.2_GRMZM2G079928_T01                   FQNYDYGCHFISACSTLLG-ITSRAHGDYICIDYFGRAVVVKILSVGVDMVRLREVLSSP 324
CAA48913.1                                      FQTENDRLAFLDCLSNLTR-VTT---RSAKSHTAWGKAFRTEVYPIGIEPKEIAKQAAG- 239
XP_028127761.1                                  FHITDYCINFVDCCQRSLGCRVD---RKNLLVEHGGRTVRVRPLPIGIPFERFVELAEKA 282
ART29424.1                                      FHITDYCLNFVDCCQRNLGCRVD---RKNLLVEHGGRSVRVRPLPIGIPFERFVELAENA 276
pdb|5HUU|B                                      FHTYDYARHFISSVSRIVPNVST----LPNGIKYQGRSISIGAFPIGIDVDNFIDGLKKD 256
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AtTPS1_AT1G78580.1                              FHTYDYARHFVSACTRILG-LEG----TPEGVEDQGRLTRVAAFPIGIDSDRFIRALEVP 345
OsTPS1_LOC_Os05g44210.1                         FHTYDYARHFVSACTRILG-LEG----TPEGVEDQGRLTRVAAFPIGIDSERFKRALELP 381
ZmTPSI.1.1_GRMZM2G068943_T02                    FHTYDYARHFVSACTRILG-LEG----TPEGVEDQGRLTRVAAFPIGIDSDRFKRALELP 367
SCA3|SP803280_c107577_g2_i1_m.97794             FHTYDYARHFVSACTRILG-LEG----TPEGVEDQGRLTRVAAFPIGIDSDRFKRALELP 381
SCA1_2|Sh_239M11_p000040                        FHTYDYARHFVSACTRILG-LEG----TPEGVEDQGRLTRVAAFPIGIDSDRFKRALELP 382
ZmTPSI.1.2_GRMZM2G001304_T01                    ------------------------------------------------------------ 0
AtTPS4_AT4G27550.1                              FHTYDFARHFLNACMCILG-VEA----TSEGIVDQGKVTRVAVFPIGIEPERFINTSELS 256
AtTPS2_AT1G16980.1                              FHTYDFARHFLSTCTRILG-VEG----THEGVVYQGRVTRVAVFPIGIDPDRFIRTCKLP 264
AtTPS3_AT1G17000.1                              FHTYDFARHFVNTCTRILG-VEG----THEGVVYQGRVTRVVVLPMGIYPNRFIKTCKLP 242

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SCA3|SP803280_c104339_g1_i3_m.83754             ------------------------------------------------------------ 0
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XP_721536.1                                     ELGVEEKVQALKQ-VYKGK--KLIVGRDRLDKVRGVIQKLEGFEIFLDMYPEWRETVVLI 370
tr|A0A090N4I6|A0A090N4I6_OSTTA                  --VCRNRRQELLK-EVAGR--KILLGVDDFDEFKGIDLRMTAFERMLEEHPRLAEQVCLM 365
AtTPS5_AT4G17770.1                              --ETQTKVAELRD-QFLDQ--KVLLGVDDMDIFKGISLKLLAMEQLLTQHPEKRGRVVLV 373
AtTPS6_AT1G68020.2                              --ETERKVGELIE-RYGRKGRTMLLGVDDMDIFKGITLKLLAMEQLLMQHPEWQGKVVLV 383
OsTPS4_LOC_Os03g12360.1                         --ETEAKVAELMA-TYSGKGRVVMLGVDDMDIFKGISLKLLAMEELLRQHPEWRGKLVLV 377
ZmTPSII.2.2_GRMZM2G099860_T01                   --ETEAKVSELME-MYSGKGRVVMLGVDDMDIFKGISLKLLAMEELLRQHPEWRGKLVLV 373
SCA1_2|Sh_203E09_p000020                        --ETEAKVAELME-MYSGKGRVVMLGVDDMDIFKGISLKLLAMEELLRQHPEWRGKLVLV 274
SAC2_1|SUGdenovo0315072.p1                      --ETEAKVAELME-MYSGKGRVVMLGVDDMDIFKGISLKLLAMEELLRQHPEWRGKLVLV 373
SCA3|SP803280_c117830_g1_i1_m.154722            --ELGVKVGELMK-QFRHRNRLLLLGVDDMDIFKGISLKLLAFEQLLMQHPEWRGRVVLV 373
OsTPS10_LOC_Os09g23350.1                        --ETGVKVAELLK-QFCDQNRLMLLGVDDMDIFKGISLKLLAFEQLLMQHPEWRGRVVLV 396
ZmTPSII.2.1_GRMZM2G019183_T02                   --ELGVKVAELLK-QFCHRNRLLLLGVDDMDIFKGISLKLLAFEQLLMQHPEWRGRVVLV 386
AtTPS7_AT1G06410.1                              --EEEGKVMELRN-RFEGK--TVLLGIDDMDIFKGINLKLLAMEQMLRQHPNWRGRAVLV 371
OsTPS3_LOC_Os01g53000.1                         --DLEWRVAELRK-QFDGK--TVMLGVDDMDIFKGINLKVLAFEQMLRTHPKWQRKAVLV 391
OsTPS6_LOC_Os05g44100.1                         --EKEKKVAELRQ-QFEGK--SVLLGVDDMDIFKGINLKLLAFENMLRTHPKWKGRAVLV 395
OsTPS2_LOC_Os01g54560.1                         --DREWRVSELQQ-QFEGK--TVLLGVDDMDIFKGINLKLLAFENMLRTHPKWQGRAVLV 411
ZmTPSII.3.3_GRMZM2G118462_T01                   --DREWRLSELQR-QFQGK--TVLLGVDDMDIFKGINLKLLAFENMLRTHPKWQGRAVLV 408
SCA2_1|c95057f1p13337.p1                        --DREWRLSELQQ-QFQGK--TVLLGVDDMDIFKGINLKLLAFENMLRTHPKWQGRAVLV 371
SCA4|evm.model.SCSP803280_000001563.1           --DREWRLSELQQ-QFQGK--TVLLGVDDMDIFKGINLKLLAFENMLRTHPKWQGRAVLV 406
ZmTPSII.3.1_GRMZM2G304274_T01                   --DREWRLSELQQ-QFQGK--TVLLGVDDMDIFKGINLKLLAFENMLRTHPKWQGRAVLV 408
ZmTPSII.3.2_GRMZM2G123277_T01                   --DREWRLSELQQ-QFQGK--TVLLGVDDMDIFKGINLKLLAFENMLRTHPKWQGRAVLV 408
AtTPS11_AT2G18700.1                             --KTAEKVKRLRE-RFKGN--IVMLGVDDLDMFKGISLKFWAMGQLLEQNEELRGKVVLV 364
OsTPS7_LOC_Os08g31980.1                         --ATVKKVQEIEQ-RYKGK--MLMLGVDDMDIFKGISLKLLGLELLLDRNPKLRGKVVLV 371
ZmTPSII.4.3_GRMZM2G366659_T01                   --ATVSKVEEIEQ-RYKGK--ILMLGVDDMDIFKGISLKLLALELLLDRNPKLREKVVLV 371
SCA2_1|c94760f1p43082.p1                        --ATISKIQEIEQ-SYKGK--ILMLGVDDMDIFKGISLKLLGLELLLDRNPKLREKVVLV 371
ZmTPSII.4.2_GRMZM2G008226_T01                   --ATVSKVQEIEQ-RYKGK--ILMLGVDDMDIFKGISLKFLGLELLLDRNPKLREKVVLV 371
OsTPSII_LOC_Os09g20990.1                        --ATISKVQEIEQ-RYKGK--MVMLGVDDMDIFKGISLKLLGLEFLLERTPKLRGKVVLV 372
ZmTPSII.4.1_GRMZM2G527891_T01                   --ATIKKVQEIES-RYSGK--LVILGVDDMDIFKGISLKLLGLELLLERTPKLRGKVVLV 373
```

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AtTPS10_AT1G60140.1                      --ATAEKLKEIQE-KYRGK--KIILGVDDMDIFKGLSLKILAFEHLLQQYPSMLGKIVLI 373
AtTPS8_AT1G70290.1                       --STAAKTKEIQE-QFKGK--KLVLGIDDMDIFKGISLKLIAMEHLFETYWHLKGKVVLV 371
AtTPS9_AT1G23870.1                       --STAAKMKEIQE-QFKGK--KLILGVDDMDIFKGISLKLIAMERLFETYWHMRGKLVLI 373
OsTPS9_LOC_Os09g25890.1                  --EAAAKFREITEVEYKGR--VLMVGVDDVDIFKGVRLKLLAMESLLETYPALRGRVVLV 367
OsTPS5_LOC_Os02g54820.1                  --ETGDLVRRLTE-SYKGR--RLMVGVDDVDLFKGIGLKFLAMEQLLVEHPELRGRAVLV 366
ZmTPSII.5.3_GRMZM2G312521_T01            --ETEDAVRRVTE-AYKGR--RLMVGVDDVDLFKGIGLKFLAMEQLLVEHRELRGRAVLV 497
ZmTPSII.5.4_GRMZM2G122231_T01            --ETEDAVRRVTE-AYKGR--RLMVGVDDVDLFKGIGLKFLAMEQLLVEHRELRGHAVLV 366
OsTPS8_LOC_Os08g34580.1                  --ETVAKANEIAD-KYRGR--QLMLGVDDMDLFKGIGLKLLAMERLLESRADLRGQVVLV 342
ZmTPSII.5.1_GRMZM2G007736_T02            --ETEAKAKEVAT-KFAGR--QLLLGVDDVDLFKGIGLKLLAMERLLESQPELHGQVVLV 468
ZmTPSII.5.2_GRMZM2G079928_T01            --ETAAKAKEVAT-KFAGR--QVLIGVDDVDLFNRIDVKLLAMERLLESRPELIGQVVLV 379
CAA48913.1                               --PLPPKLAQLKA-ELKNV--QNIFSVERLDYSKGLPERFLAYEALLEKYPQHHGKIRYT 294
XP_028127761.1                           --PK--------V-ISTNQ--KIILGVDRLDYTKGLVHRLKAFEKLLENHPEHKEKVSLL 329
ART29424.1                               --PK--------V-LSTTQ--KIILGVDRLDYTKGLVHRLLAFEKLLEHHPEHKGKVSLL 323
pdb|5HUU|B                               --SVVERIKQLKS-KFKDV--KVIVGVDRLDYIKGVPQKLHAFEVFLNENPEWIGKVVLV 311
tr|Q01GJ2|Q01GJ2_OSTTA                  --QVQDHIKELQE-RFRGR--KVMLGVDRLDMIKGIPHKLLAFEKFLIENPEWKDKCCLI 451
AtTPS1_AT1G78580.1                       --EVIQHMKELKE-RFAGR--KVMLGVDRLDMIKGIPQKILAFEKFLEENANWRDKVVLL 400
OsTPS1_LOC_Os05g44210.1                  --AVKRHITELTQ-RFDGR--KVMLGVDRLDMIKGIPQKILAFEKFLEENHEWNDKVVLL 436
ZmTPSI.1.1_GRMZM2G068943_T02             --AVKRHVSELTE-RFAGR--KVMLGVDRLDMIKGIPQKILAFEKFLEENPDWNNKVVLL 422
SCA3|SP803280_c107577_g2_i1_m.97794      --AVKRHISELTE-RFAGR--KVMLGVDRLDMIKGIPQKILAFEKFLEENQDWNNKVVLL 436
SCA1_2|Sh_239M11_p000040                 --AVKRHISELTE-RFAGR--KVMLGVDRLDMIKGIPQKILAFEKFLEENQDWNNKVVLL 437
ZmTPSI.1.2_GRMZM2G001304_T01             -----------------------MLGVDRLDMIKGIPQKILAFEKFLEENPDWNDKVVLL 37
AtTPS4_AT4G27550.1                       --EVVQYMKKFKN-DFGGR--KLILGVDRLDTIKGIPQKYQAFEKFLEENAEWRGKVMLL 311
AtTPS2_AT1G16980.1                       --EVTQQMNELQE-KFAGK--KVILGVDRLDMIKGIPQKYLAFEKFLEENPYWRDKVVLV 319
AtTPS3_AT1G17000.1                       --EVIQQMNELKD-RFSGK--KVILGVDRLDMIKGIPQKYLGFEKFLDENPNWRDKIVLV 297
                                                                  R162

tr|Q00WH8|Q00WH8_OSTTA                   ------------------------------------------------------------MS 2
SCA5|SCEZRZ3019C12.g.p1                  -----MRKQGGM----QR---EGREKGDGRGGWLCGILP---RGGSLRPSRECRLFTFNG 45
SCA3|SP803280_c110556_g1_i2_m.112799     ------------------------------------------------------------M 1
SCA1_2|Sh_210F11_p000130                 ------------------------------------------------------------ 0
SCA3|SP803280_c104339_g1_i3_m.83754      ------------------------------------------------------------ 0
SCA4|evm.model.SCSP803280_000048991.1    ------------------------------------------------------------ 0
SCA3|SP803280_c109234_g1_i4_m.105886     ------------------------------------------------------------ 0
SCA3|SP803280_c102057_g1_i4_m.74365      ------------------------------------------------------------ 0
SAC2_1|SUGdenovo0588378.p1               ------------------------------------------------------------ 0
5DXF_1|Chains                            QVSSPGYSHSAN---VETRVTEIISRINSKYGN-LNHTPVLHYQMRVAKEEYLALLRVAD 426
XP_721536.1                              QVSSPGYSHSAN---VETRVTEIISRINSKYGN-LNHTPVLHYQMRVAKEEYLALLRVAD 426
tr|A0A090N4I6|A0A090N4I6_OSTTA           QTCTPPRSSGRDINELRNTVNELVERINAKYSV-NGVPVLKFEIKPVAIHERIALHSVAD 424
AtTPS5_AT4G17770.1                       QIANPARGRGKDVQEVQSETEATVKRINEMFGR-PGYQPVVLIDTPLQFFERIAYYVIAE 432
AtTPS6_AT1G68020.2                       QIANPARGKGKDVKEMQAETYSTVKRINETFGR-PGYDPIVLIDAPLKFYERVAYYVVAE 442
OsTPS4_LOC_Os03g12360.1                  QVANPARGRGKDVDEVKGETYAMVRRINEAYGA-PGYEPVVLIDEPLQFYERVAYYVVAE 436
ZmTPSII.2.2_GRMZM2G099860_T01            QVANPARGRGKDVAEVQTETYAMVRRINEVYGE-PGYEPVVLIDEPLQFYERVAYYVIAE 432
SCA1_2|Sh_203E09_p000020                 QVANPARGRGKDVAEVQAETYAMVQRINEVYGE-PGYEPVVLIDEPLQFYERVAYYVIAE 333
SAC2_1|SUGdenovo0315072.p1               QVANPARGRGKDVAEVQAETYAMVQRINEVYGE-PGYEPVVLIDEPLQFYERVAYYVIAE 432
SCA3|SP803280_c117830_g1_i1_m.154722     QIANPARGRGKDVKEVQEESDAMVKRINDAFGQ-PDYQPVILIDKPLQFYERMAYYVVAE 432
OsTPS10_LOC_Os09g23350.1                 QIANPARGRGKDVKEVQDESYAMVRRINEAFGQ-PGYQPVILIDRPLQFYERMAYYVVAE 455
ZmTPSII.2.1_GRMZM2G019183_T02            QIANPARGRGKDVREVQEESDAMVRRINDAFGQ-PGYQPVILIDQPLQFYERMAYYVVAE 445
AtTPS7_AT1G06410.1                       QIVNPARGKGIDVEEIRGEIEESCRRINGEFGK-PGYQPIIYIDTPVSINEINAYYHIAE 430
OsTPS3_LOC_Os01g53000.1                  QIANPRGGGGKDLEEIQAEIDESCRRINAQFSR-PGYVPVVIINRALSSVERMAYYTVAE 450
OsTPS6_LOC_Os05g44100.1                  QIANPARGKGKDLEAVQAEIRESCDRINKEFGQ-SGYSPVIFIDQSVPSAVRLAYYTVAE 454
OsTPS2_LOC_Os01g54560.1                  QIANPARGKGKDLEAIQAEIHESCKRINGEFGQ-SGYSPVVFIDRDVSSVEKIAYYTIAE 470
ZmTPSII.3.3_GRMZM2G118462_T01            QIANPARGRGKDLEAIQAEIEESCQRINGDFGQ-SGYSPVVFIGRDVSSVEKIAYYTIAE 467
SCA2_1|c95057f1p13337.p1                 QIANPARGRGKDLEAIQAEIEESCQRINGDFGQ-SGYSPVVFIDRDVSSVEKIAYYTIAE 430
SCA4|evm.model.SCSP803280_000001563.1    QIANPARGRGKDLEAIQAEIEESCQRINGDFGQ-SGYSPVVFIDRDVSSVEKIAYYTIAE 465
ZmTPSII.3.1_GRMZM2G304274_T01            QIANPARGRGKDLEAIQAEIEQSCQRINVDFGQ-SGYSPVVFINRDVSSVEKVAYYTIAE 467
ZmTPSII.3.2_GRMZM2G123277_T01            QIANPARGRGKDLEAIQAEIEESCQRINGDFGQ-SGYSPVVFIDRDVSSVEKIAYYTIAE 467
AtTPS11_AT2G18700.1                      QITNPARSSGKDVQDVEKQINLIADEINSKFGRPGGYKPIVFINGPVSTLDKVAYYAISE 424
OsTPS7_LOC_Os08g31980.1                  QIVNPARSTGKDVEEAITESVSVAERINLKYGS-VDYKPVVLIDHRIPFYEKIAFYAASD 430
ZmTPSII.4.3_GRMZM2G366659_T01            QIINPARSTGKDVQEAITEAVSVAERVNTKYGS-SSYKPVVLIDNRIPFYEKVAFYAASD 430
SCA2_1|c94760f1p43082.p1                 QIINPARSTGKDVQEAITEAVSVAERINTKYGS-SSYKPVVLIDHRIPFYEKIAFYAASD 430
ZmTPSII.4.2_GRMZM2G008226_T01            QIINPARSTGKDVQEAITEAVSVAERINTNYGS-SSYKPVVLIDHHIPFYEKIAFYAASD 430
OsTPS11_LOC_Os09g20990.1                 QIINPARSTGKDVEEAINEAVSVAERINIKYGS-AEYKPVILIDYPIPSYEKIAYYAASD 431
ZmTPSII.4.1_GRMZM2G527891_T01            QIVNPARSIGKDIEEAKYEAESVAQRINDKYGS-ANYKPVVLIDYSIPFYEKIAFYAASD 432
AtTPS10_AT1G60140.1                      QIVNPARGSGKDVQEARKETYDTVKRINERYGS-HDYEPVVLIDRPVPRFEKSAYYALAE 432
AtTPS8_AT1G70290.1                       QIVNPARSSGKDVEEAKRETYETARRINERYGT-SDYKPIVLIDRLVPRSEKTAYYAAAD 430
AtTPS9_AT1G23870.1                       QIVNPARATGKDVEEAKKETYSTAKRINERYGS-AGYQPVILIDRLVPRYEKTAYYAMAD 432
OsTPS9_LOC_Os09g25890.1                  QIHNPTRCGGRDVERVRGETAKIQARINARFGGP-GYQPVVVVDRAVPMAEKVAYYAAAE 426
OsTPS5_LOC_Os02g54820.1                  QIANPARSEGRDIQEVQGEARAISARVNARFGTP-GYTPIVLIDRGVSVHEKAAYYAAAE 425
ZmTPSII.5.3_GRMZM2G312521_T01            QIANPARSEGRDVQGVQDEARAISARVNARFGTP-GYTPIVLIDGPVTPQEKAAYYAAAE 556
ZmTPSII.5.4_GRMZM2G122231_T01            QIANPARSEGRDVQGVQDEARAISARVNARFGTP-GYTPIVLIDAPVTPQEKAAYYAAAE 425
OsTPS8_LOC_Os08g34580.1                  QINNPARSLGRDVDEVRAEVLAIRDRINARFGWA-GYEPVVVIDGAMPMHDKVAFYTSAD 401
ZmTPSII.5.1_GRMZM2G007736_T02            QINNPVRSPGYDTDEICAELQAMRKRINARFATPAGYEPIVIIEDPMTMHEKLAFYTSAD 528
ZmTPSII.5.2_GRMZM2G079928_T01            QINNPARSPGRDTDTVLAEVQLLMDRINARFAKP-GYDPIVMIDDPLTMHEKLAFYTSAD 438
CAA48913.1                               QIAPTSRGDVQAYQDIRHQLENEAGRINGKYGQ-LGWTPLYYLNQHFDRKLLMKIFRYSD 353
XP_028127761.1                           QISVPSRTDVKEYQDLKEEMDQLVGRINGRFTT-PNWSPIRYIYGCVSQDELAAFYRDAA 388
ART29424.1                               QIAVPSRIDVKEYQDLKEEMDQLVGRINGKFTT-PNWSPIRYIYGCVSQDELAAFYRDAA 382
pdb|5HUU|B                               QVAVPSRGDVEEYQSLRSTVSELVGRINGEFGT-VEFVPIHYLHKSIPFDELISLYNISD 370
tr|Q01GJ2|Q01GJ2_OSTTA                  QIAVPTRSEVPEYQKLASTVHEIVGRINGRFGS-IGSIPIQHLDCSMQFPELCALYSVTD 510
AtTPS1_AT1G78580.1                       QIAVPTRTDVPEYQKLTSQVHEIVGRINGRFGT-LTAVPIHHLDRSLDFHALCALYAVTD 459
OsTPS1_LOC_Os05g44210.1                  QIAVPTRTDVPEYQKLTSQVHEIVGRINGRFGT-LTAVPIHHLDRSLDFHALCALYAVTD 495
ZmTPSI.1.1_GRMZM2G068943_T02             QIAVPTRTDVPEYQKLTSQVHEIVGRINGRFGT-LTAVPIHHLDRSLDFHALCALYAVTD 481
SCA3|SP803280_c107577_g2_i1_m.97794      QIAVPTRTDVPEYQKLTSQVHEIVGRINGRFGT-LTAVPIHHLDRSLDFHALCALYAVTD 495
SCA1_2|Sh_239M11_p000040                 QIAVPTRTDVPEYQKLTSQVHEIVGRINGRFGT-LTAVPIHHLDRSLDFHALCALYAVTD 496
ZmTPSI.1.2_GRMZM2G001304_T01             QIAVPTRTDVPEYQKLTSQVHEIVGRINGRFGT-LTAVPIHHLDRSLDFHALCALYAVTD 96
AtTPS4_AT4G27550.1                       QIAVPTRNGIGEYQKIKDQCHYHVGRINGRFGS-ISSVPIIHLDCSIDFNQLCALYAITD 370
AtTPS2_AT1G16980.1                       QIAVPTRNDVPEYRKLKSQVHGLVGRINGRFGS-VSSLPIHHLDCSVDFNYLCAIYAIAD 378
AtTPS3_AT1G17000.1                       QIAVPTRNEVPEYQKLKNQVHRLVGRINGRFGS-VSSLPIHHMDCSVDSNYLCALYAISD 356

tr|Q00WH8|Q00WH8_OSTTA                   Y-----------------------------------KDMGRAGPLEIR------------ 15
SCA5|SCEZRZ3019C12.g.p1                  L-----------------------------------DATGLNSPVIADHL--PTLA---- 64
SCA3|SP803280_c110556_g1_i2_m.112799     D-----------------------------------LKTGLNSPVIADHL--PTLA---- 20
SCA1_2|Sh_210F11_p000130                 -----------------------------------MDMSSSSPVITDPI---SIS---- 17
SCA3|SP803280_c104339_g1_i3_m.83754      -----------------------------------MDMSSSSPVITDPI---SIS---- 17
SCA4|evm.model.SCSP803280_000048991.1    ---------------------------------------MTKHGVVLED------------ 10
SCA3|SP803280_c109234_g1_i4_m.105886     ---------------------------------------MTKHAAY-PSEDMVAAVA---- 17
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SCA3|SP803280_c102057_g1_i4_m.74365          ------------------------------------MTKQGVVVPVP--EAAVA---- 16
SAC2_1|SUGdenovo0588378.p1                   ------------------------------------------------------- 0
5DXF_1|Chains                                LALITSVRDGMNTTSLEFVICQKY----------------NNSPLILSE----------- 459
XP_721536.1                                  LALITSVRDGMNTTSLEFVICQKY----------------NNSPLILSE----------- 459
tr|A0A090N4I6|A0A090N4I6_OSTTA                VSVVTATRDGMNLAPYEYITCRQGPSDEARGTAEGFS-LPRQSALIISE----------- 472
AtTPS5_AT4G17770.1                           CCLVTAVRDGMNLIPYEYIICRQGNPKLNETIGLDPS-AAKKSMLVVSE----------- 480
AtTPS6_AT1G68020.2                           CCLVTAVRDGMNLIPYEYIVSRQGNEKLDKILKLEANNRNKKSMLVVSE----------- 491
OsTPS4_LOC_Os03g12360.1                      VCLVTAVRDGMNLIPYEYIVSRQGNEALDRMLQPSKP-EEKKSMLVVSE----------- 484
ZmTPSII.2.2_GRMZM2G099860_T01                VCLVTAVRDGMNLIPYEYIVSRQGNEKLDRMLRQGKP-EEKKSMLVVSE----------- 480
SCA1_2|Sh_203E09_p000020                     VCLVTAVRDGMNLIPYEYIVSRQGNEKLDRMLRQGKP-EEKKSMLVVSE----------- 381
SAC2_1|SUGdenovo0315072.p1                   VCLVTAVRDGMNLIPYEYIVSRQGNEKLDRMLRQGKP-EEKKSMLVVSE----------- 480
SCA3|SP803280_c117830_g1_i1_m.154722         CCLVTAVRDGMNLIPYEYVIARQGNEMIDTILGLGPT-SRKKSMLVVSE----------- 480
OsTPS10_LOC_Os09g23350.1                     CCLVTAVRDGMNLIPYEYVIARQGNEKLDGILGLGPS-ARKKSMLVVSE----------- 503
ZmTPSII.2.1_GRMZM2G019183_T02                CCLVTAVRDGMNLIPYEYVIARQGNERIDSILGLGPA-SRKKSMLVVSE----------- 493
AtTPS7_AT1G06410.1                           CVVVTAVRDGMNLTPYEYIVCRQGLLGSE--SDFS---GPKKSMLVASE----------- 474
OsTPS3_LOC_Os01g53000.1                      CVVVTAVRDGMNLTPYEYIVCRQGFPDLDGSGDDG---PRRKSMLVVSE----------- 496
OsTPS6_LOC_Os05g44100.1                      CVVVTAVRDGMNLTPYEYIVCREGIPGSECAPEVS---GPKKSMLVVSE----------- 500
OsTPS2_LOC_Os01g54560.1                      CVVVTAVRDGMNLTPYEYIVCRQGS---DSTSEVN---GPKKSMLVVSE----------- 513
ZmTPSII.3.3_GRMZM2G118462_T01                CVVVTAVRDGMNLTPYEYVVCRQGAPGSQSVSEVS---GPKKSMLVVSE----------- 513
SCA2_1|c95057f1p13337.p1                     CVVVTAVRDGMNLTPYEYIVCRQGAPRSESMSEVS---GPKKSMLVVSE----------- 476
SCA4|evm.model.SCSP803280_000001563.1        CVVVTAVRDGMNLTPYEYIVCRQGAPRSESMSEVS---GPKKSMLVVSE----------- 511
ZmTPSII.3.1_GRMZM2G304274_T01                CVVVTAVRDGMNLTPYEYIVCRQGAPGSESVSEVS---GPKKSMLVVSE----------- 513
ZmTPSII.3.2_GRMZM2G123277_T01                CVVVTAVRDGMNLTPYEYIVCRQGAPGSESVSEVG---GPKKSMLVVSE----------- 513
AtTPS11_AT2G18700.1                          CVVVNAVRDGMNLVPYKYTVTRQGSPALDAALGFGED-DVRKSVIIVSE----------- 472
OsTPS7_LOC_Os08g31980.1                      CCIVNALRDGMNLVPYEYTVCRQGNEEIDNARGSDTN-CHHTSTLIVSE----------- 478
ZmTPSII.4.3_GRMZM2G366659_T01                CCIVNAVRDGMNLVPYEYTVCRQGNEEIDRVRGLDKD-THHTSTLIVSE----------- 478
SCA2_1|c94760f1p43082.p1                     CCIVNAVRDGMNLVPYEYTVCRQGNEEIDKLRGLDKD-THHTSTLIVSE----------- 478
ZmTPSII.4.2_GRMZM2G008226_T01                CCIVNAVRDGMNLVPYEYTVCRQGNEEIDKLRGLGKD-THHTSTLIVSE----------- 478
OsTPS11_LOC_Os09g20990.1                     CCIVNAVRDGMNLIPYEYTVCRQGNEEIDKLRGVDKS-SHHTSTLIVSE----------- 479
ZmTPSII.4.1_GRMZM2G527891_T01                CCIVNAVRDGMNLIPYEYTVCRQGNEELDKLRGLNKS-SSHTSTLIVSE----------- 480
AtTPS10_AT1G60140.1                          CCIVNAVRDGMNLVPYKYTVCRQGTPSMNKSLGVSDD-LPRTSTLVLSE----------- 480
AtTPS8_AT1G70290.1                           CCLVNAVRDGMNLVPYKYIVCRQGTRSNKA---VVDS-SPRTSTLVVSE----------- 475
AtTPS9_AT1G23870.1                           CCLVNAVRDGMNLVPYKYIICRQGTPGMDKAMGISHD-SARTSMLVVSE----------- 480
OsTPS9_LOC_Os09g25890.1                      CCVVSAVRDGLNRIPYFYTVCREEGPVDAKGAAGG---QPRHSAIVLSE----------- 472
OsTPS5_LOC_Os02g54820.1                      CCVVSAVRDGLNRIPYIYTVCRQESTGLD----D----AAKRSVIVLSE----------- 466
ZmTPSII.5.3_GRMZM2G312521_T01                CCVLSAVRDGLNRIPYIYTVCRQESTALG----DD---APKRSAIVLSE----------- 598
ZmTPSII.5.4_GRMZM2G122231_T01                CCVVSAVRDGLNRIPYIYTVCRQESTALG----DD---SPKRSVIVLSE----------- 467
OsTPS8_LOC_Os08g34580.1                      ICIVNAVRDGLNRIPYFYTVCRQEGPVPT--APAG---KPRQSAIIVSE----------- 445
ZmTPSII.5.1_GRMZM2G007736_T02                ICLVTAVRDGLNRTPYIYTVCRQEGPISS--GVVG---APKEGAIVLSE----------- 572
ZmTPSII.5.2_GRMZM2G079928_T01                ICIVTAVRDGLNRTPYIYTVCREHGPISS--GVAG---APRESAIVLSE----------- 482
CAA48913.1                                   VGLVTPLRDGMNLVAKEYVAAQDP----------------ANPGVLVLSQ----------- 387
XP_028127761.1                               VGLVTPLRDGMNLVAKEFVACQIN----------------IPPGVLIVSP----------- 422
ART29424.1                                   VGLVTPLRDGMNLVAKEFVACQIN----------------TPPGVLIVSP----------- 416
pdb|5HUU|B                                   VCLVSSTRDGMNLVSYEYIACQQD----------------RKGVLILSE----------- 403
tr|Q01GJ2|Q01GJ2_OSTTA                       VMLVTSQRDGMNLVSYEFVSCQNK----------------SNAGVLVLSE----------- 544
AtTPS1_AT1G78580.1                           VALVTSLRDGMNLVSYEFVACQEA----------------KKGVLILSE----------- 492
OsTPS1_LOC_Os05g44210.1                      VALVTSLRDGMNLVSYEYVACQGS----------------KKGVLILSE----------- 528
ZmTPSI.1.1_GRMZM2G068943_T02                 VALVTSLRDGMNLVSYEYVACQGS----------------KKGVLILSEVADRLCMTYNQ 525
SCA3|SP803280_c107577_g2_i1_m.97794          VALVTSLRDGMNLVSYEYVACQGS----------------KKGVLILSE----------- 528
SCA1_2|Sh_239M11_p000040                     VALVTSLRDGMNLVSYEYVACQGS----------------KKGVLILSE----------- 529
ZmTPSI.1.2_GRMZM2G001304_T01                 VALVTSLRDGMNLVSYEYVACQGS----------------KKGVLILSE----------- 129
AtTPS4_AT4G27550.1                           VLLVTSLRDGMNLVSSEFIACQKA----------------EKGVLILSE----------- 403
AtTPS2_AT1G16980.1                           VMLVTSLRDGMNLVSYEFVACQEA----------------KKGVLVLSE----------- 411
AtTPS3_AT1G17000.1                           VMLVTSLRDGLNLVSHEFVACQEA----------------KRGVLILSE----------- 389
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R370 D371 E379

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tr|Q00WH8|Q00WH8_OSTTA                       ----------TRGPPFGGLPQAQ------------------------AGMKRSD------ 35
SCA5|SCEZRZ3019C12.g.p1                      -S--PAAVMTFTTPTSFPSPGLCLNT-TKKIPLPGKI-EEVRATGWLDLMKASSPTRKRQ 119
SCA3|SP803280_c110556_g1_i2_m.112799         -S--PAAVMTFTTPTSFPSPGLCLNT-TKKIPLPGKI-EEVRATGWLDLMKASSPTRKRQ 75
SCA1_2|Sh_210F11_p000130                     -PP-LLGGLTSNLMPFSVMSGGCSSPS--MSASRRKI-EEVLVNGLLDAMKSSSPRRKHN 72
SCA3|SP803280_c104339_g1_i3_m.83754          -PP-LLGGLTSNLMPFSVMSGGCSSPS--MSASRRKI-EEVLVNGLLDAMKSSSPRRKHN 72
SCA4|evm.model.SCSP803280_000048991.1        ----VAAARHFSFPPPRTATVAGGSDSCRKLAAQVDL-GAAVMGSWLDSMKASSPRHRLM 65
SCA3|SP803280_c109234_g1_i4_m.105886         -APAPAGRHFTSFPPLKGASLDCKKHASVDLS--ASG-AAVVGGSWFESMKASSPRCAAV 73
SCA3|SP803280_c102057_g1_i4_m.74365          -VP-PNSAPLFQYPPPRAAPGVAV---RKKYL--QMG-AGRIAGGWVDSMRASSPTHARA 68
SAC2_1|SUGdenovo0588378.p1                   ------------------------------------------------------- 0
5DXF_1|Chains                                ------------------F-TGT---------ATVLK-DAIMVNPWDSVGVAKTINDALM 490
XP_721536.1                                  ------------------F-TGT---------ATVLK-DAIMVNPWDSVGVAKTINDALM 490
tr|A0A090N4I6|A0A090N4I6_OSTTA                ------------------F-TGC---------SPSLS-GALRVNPWHIQDVADAMYKALQ 503
AtTPS5_AT4G17770.1                           ------------------F-IGC---------SPSLS-GAIRVNPWNIDAVTEAMDYALI 511
AtTPS6_AT1G68020.2                           ------------------F-IGC---------SPSLS-GAIRVNPWNVDAVADAMDSALE 522
OsTPS4_LOC_Os03g12360.1                      ------------------F-IGC---------SPSLS-GAVRVNPWNIEAVADAMESALV 515
ZmTPSII.2.2_GRMZM2G099860_T01                ------------------F-IGC---------SPSLS-GAIRVNPWNIEAVADAMETALV 511
SCA1_2|Sh_203E09_p000020                     ------------------F-IGC---------SPSLS-GAIRVNPWNIEAVADAMETALV 412
SAC2_1|SUGdenovo0315072.p1                   ------------------F-IGC---------SPSLS-GAIRVNPWNIEAVADAMETALV 511
SCA3|SP803280_c117830_g1_i1_m.154722         ------------------F-IGC---------SPSLS-GAIRVNPWNIDSVADAMDYALE 511
OsTPS10_LOC_Os09g23350.1                     ------------------F-IGC---------SPSLS-GAIRVNPWNIDAVADAMDSALE 534
ZmTPSII.2.1_GRMZM2G019183_T02                ------------------F-IGC---------SPSLS-GAIRVNPWNIDSVADAMDYALE 524
AtTPS7_AT1G06410.1                           ------------------F-IGC---------SPSLS-GAIRVNPWNVEATGEALNEALS 505
OsTPS3_LOC_Os01g53000.1                      ------------------F-IGC---------SPSLS-GAIRVNPWNIDTTAEAMNESIA 527
OsTPS6_LOC_Os05g44100.1                      ------------------F-IGC---------SPSLS-GAIRVNPWNIEATAEALNEAIS 531
OsTPS2_LOC_Os01g54560.1                      ------------------F-IGC---------SPSLS-GAIRVNPWNIEATAEALNEAIS 544
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OsTPS2_LOC_Os01g54560.1                  ------------------F-IGC---------SPSLS-GAIRVNPWNIEATAEAMNEAIS 544
ZmTPSII.3.3_GRMZM2G118462_T01            ------------------F-IGC---------SPSLS-GAIRVNPWNIEATAEAMNEAIS 544
SCA2_1|c95057f1p13337.p1                 ------------------F-IGC---------SPSLS-GAIRVNPWNIEATAEAMNEAIS 507
SCA4|evm.model.SCSP803280_000001563.1    ------------------F-IGC---------SPSLS-GAIRVNPWNIEATAEAMNEAIS 542
ZmTPSII.3.1_GRMZM2G304274_T01            ------------------F-IGC---------SPSLS-GAIRVNPWNIEATAEAMNEAIS 544
ZmTPSII.3.2_GRMZM2G123277_T01            ------------------F-IGC---------SPSLS-GAIRVNPWNIEATAEAMNEAIS 544
AtTPS11_AT2G18700.1                      ------------------F-IGC---------SPSLS-GAIRVNPWNIDAVTNAMSSAMT 503
OsTPS7_LOC_Os08g31980.1                  ------------------F-VGC---------SPSLS-GAFRVNPWSVDDVADALHHATD 509
ZmTPSII.4.3_GRMZM2G366659_T01            ------------------F-VGC---------SPSLS-GAFRVNPWSVDDVADALCRATD 509
SCA2_1|c94760f1p43082.p1                 ------------------F-VGC---------SPSLS-GAFRVNPWSVDDVADALCRATD 509
ZmTPSII.4.2_GRMZM2G008226_T01            ------------------F-VGC---------SPSLS-GAFRVNPWSVDDVADALCRATD 509
OsTPS11_LOC_Os09g20990.1                 ------------------F-VGC---------SPSLS-GAFRVNPWSIEDVADALYKAMD 510
ZmTPSII.4.1_GRMZM2G527891_T01            ------------------F-VGC---------SPSLS-GAFRVNPWSMEDVADALYSVTD 511
AtTPS10_AT1G60140.1                      ------------------F-IGC---------SPSLS-GAIRVNPWDVDAVADSLYSAIT 511
AtTPS8_AT1G70290.1                       ------------------F-IGC---------SPSLS-GAIRVNPWDVDAVAEAVNSALK 506
AtTPS9_AT1G23870.1                       ------------------F-IGC---------SPSLS-GAIRVNPWDVDAVAEAVNLALT 511
OsTPS9_LOC_Os09g25890.1                  ------------------F-VGC---------SPSLS-GAIRVNPWNIEAMAEAMHGALT 503
OsTPS5_LOC_Os02g54820.1                  ------------------F-VGC---------SPSLS-GAIRVNPWSVESMAEAMNAALR 497
ZmTPSII.5.3_GRMZM2G312521_T01            ------------------F-VGC---------SPSLS-GAIRVNPWSVESVAEAMNAALR 629
ZmTPSII.5.4_GRMZM2G122231_T01            ------------------F-VGC---------SPSLS-GAIRVNPWSVESVAEAMNAALR 498
OsTPS8_LOC_Os08g34580.1                  ------------------F-VGC---------SPSLS-GAIRVNPWNVDDVADAMNTALR 476
ZmTPSII.5.1_GRMZM2G007736_T02            ------------------F-VGC---------ATSLG-GAVHINPWNVDAVAEGMHMALR 603
ZmTPSII.5.2_GRMZM2G079928_T01            ------------------L-VGC---------STFLR-GAVRVNPWNVDDVVEGMSSALR 513
CAA48913.1                               ------------------F-AGA---------ANELT-SALIVNPYDRDEVAAALDRALT 418
XP_028127761.1                           ------------------F-AGA---------GETMH-EALISNPYEIDEASEVIHRALT 453
ART29424.1                               ------------------F-AGA---------GETMH-EALICNPYEINDASEVIHRALT 447
pdb|5HUU|B                               ------------------F-AGA---------AQSLN-GALIVNPWNTEDLSEAIKESLT 434
tr|Q01GJ2|Q01GJ2_OSTTA                   ------------------F-AGA---------AQSIGAGALLVNPHNVTEVAHAIKEALT 576
AtTPS1_AT1G78580.1                       ------------------F-AGA---------AQSLGAGAILVNPWNITEVAASIGQALN 524
OsTPS1_LOC_Os05g44210.1                  ------------------F-AGA---------AQSLGAGAILVNPWNITEVADSIKHALT 560
ZmTPSI.1.1_GRMZM2G068943_T02             GVEDVLFIYLFLLSLQFQF-AGA---------AQSLGAGAILVNPWNITEVADSIRHALT 575
SCA3|SP803280_c107577_g2_i1_m.97794      ------------------F-AGA---------AQSLGAGAILVNPWNITEVADSIRHALT 560
SCA1_2|Sh_239M11_p000040                 ------------------F-AGA---------AQSLGAGAILVNPWNITEVADSIRHALT 561
ZmTPSI.1.2_GRMZM2G001304_T01             ------------------F-AGA---------AQSLGAGAILVNPWNITEVADSIHHALT 161
AtTPS4_AT4G27550.1                       ------------------F-AGA---------GQSLGAGAILVNPWNIKEVSSAIGEALN 435
AtTPS2_AT1G16980.1                       ------------------F-AGA---------GQSLGVGALIVNPWDVTEVSSAIKEALN 443
AtTPS3_AT1G17000.1                       ------------------F-AGA---------GQSLGAGALLVNPWNVTEVSSAIKKALN 421


tr|Q00WH8|Q00WH8_OSTTA                   -SIGTIE------K---YWDDDAEWYEF------------------------------H 54
SCA5|SCEZRZ3019C12.g.p1                  TKDVICDT-----QSDDLDLHYRNWTNRNQYVSDSHC----------------FTFVGEL 158
SCA3|SP803280_c110556_g1_i2_m.112799     TKDVICDT-----QSDDLDLQYRNWTVN-----------------------------Y 99
SCA1_2|Sh_210F11_p000130                 IAFG--QD-----NSLDEDPAYSAWLSK------------------------------C 94
SCA3|SP803280_c104339_g1_i3_m.83754      LAFG--QD-----NSLDEDPAYNAWLSK------------------------------C 94
SCA4|evm.model.SCSP803280_000048991.1    AP-----------LPGAADAEHDDWMER------------------------------H 83
SCA3|SP803280_c109234_g1_i4_m.105886     ------------------DAEHGDWMEK------------------------------H 84
SCA3|SP803280_c102057_g1_i4_m.74365      AAAL---------AAGVDEERYAAWMVK------------------------------H 88
SAC2_1|SUGdenovo0588378.p1               ----------------VDEERYAAWMVK------------------------------H 13
5DXF_1|Chains                            LSTKEKVSLESKLYEKVLSNTVQNWTSTFICDILSHSIVTHSN------------S---- 534
XP_721536.1                              LSTKEKVSLESKLYEKVLSNTVQNWTSTFICDILSHSIVTHSN------------SYTP- 537
tr|A0A090N4I6|A0A090N4I6_OSTTA            MSGHEHEARHEKHWRYVSEHHVGFWAQSCLAELQRVTEKANGNRCYGLGFGLNFRVVHLS 563
AtTPS5_AT4G17770.1                       VSEAEKQMRHEKHHKYVSTHDVAYWARSFIQDLERACGDHVRKRCWGIGFGLGFRVVALD 571
AtTPS6_AT1G68020.2                       VAEPEKQLRHEKHYKYVSTHDVGYWARSFLQDLERSCGEHGRRRCWGIGFGLSFRVVALD 582
OsTPS4_LOC_Os03g12360.1                  LPEKEKRMRHDKHYRYVDTHDVGYWATSFLQDLERTCKDHAQRRCWGIGFGLRFRVVSLD 575
ZmTPSII.2.2_GRMZM2G099860_T01            LPENEKRLRHDKHFRYVSTHDVGYWANSFLLDLERTCKYHSQKRCWGIGFGLRFRVVSLD 571
SCA1_2|Sh_203E09_p000020                 LPENEKGLRHDKHFRYVSTHDVGYWAISFLEDLKRTCSDHSQRRCWGIGFGLRFRVVSLD 472
SAC2_1|SUGdenovo0315072.p1               LPENEKRLRHDKHFRYVSTHDVGYWAISFLEDLKRTCSDHSQRRCWGIGFGLRFRVVSLD 571
SCA3|SP803280_c117830_g1_i1_m.154722     MPEGEKVLRHEKHHRYVSTHDVGYWANSFLQDLERICHDHNRRRCWGIGFGLKFRVVALD 571
OsTPS10_LOC_Os09g23350.1                 MPEGEKVLRHEKHHKYVSTHDVGYWANSFLQDLERTCLDHSRRRCWGIGFGLRFRVVALD 594
ZmTPSII.2.1_GRMZM2G019183_T02            MPEGEKVLRHEKHHRYVSTHDVGYWANSFLQDLERICLDHNRRRCWGIGFGLKFRVVALD 584
AtTPS7_AT1G06410.1                       MSDAEKQLRHEKHFRYVSTHDVAYWSRSFLQDLERICVDHFKKRCWGMGISFGFRVVALD 565
OsTPS3_LOC_Os01g53000.1                  LSENEKQLRHEKHYRYVSSHDVAYWSKSYIHDLERSCRDHFRRRCWGIGLGFGFRVVALD 587
OsTPS6_LOC_Os05g44100.1                  MSEREKQLRHEKHYRYVSTHDVAYWSKSFVQDLERACKDHFRKPCWGIGLGFGFRVVALD 591
OsTPS2_LOC_Os01g54560.1                  MSEQEKHLRHEKHYRYVSTHDVAYWSKSFIQDLERACKDHFRRTCWGIGLGFGFRVVALD 604
ZmTPSII.3.3_GRMZM2G118462_T01            MPEQEKQLRHEKHYRYVRSHDVAYWSKSFIIDLERVCKDHFKRTCWGIGLGFGFRVVALD 604
SCA2_1|c95057f1p13337.p1                 MPEQEKQLRHEKHYRYVSSHDVAFWSKSFIQDLQRACKEHFTRTCWGIGLGFGFRVVALD 567
SCA4|evm.model.SCSP803280_000001563.1    MPEQEKQLRHEKHYRYVSSHDVAFWSKSFIQDLQRACKEHFTRTCWGIGLGFGFRVVALD 602
ZmTPSII.3.1_GRMZM2G304274_T01            MPEQEKQLRHEKHYRYVSSHDVAYWSKSFILDLERACRDHFKRTCWGIGLGFGFRVVALD 604
ZmTPSII.3.2_GRMZM2G123277_T01            MPEQEKQLRHEKHYRYVSSHDVAYWSKSFILDLERACRDHFKRTCWGIGLGFGFRVVALD 604
AtTPS11_AT2G18700.1                      MSDKEKNLRHQKHHKYISSHNVAYWARSYDQDLQRACKDHYNKRFWGVGFGLFFKVVALD 563
OsTPS7_LOC_Os08g31980.1                  LTESEKRLRHEKHYRYVRSHSVAYWAHSFAQDLERACKDHYSRRCWAIGFGLNFRVIALS 569
ZmTPSII.4.3_GRMZM2G366659_T01            LSESEKRLRHEKHYRYVSTHDVAYWAHSFAQDLERACRDHYSRRCWAIGFGLNFRVIALS 569
SCA2_1|c94760f1p43082.p1                 LTESEKRLRHEKHYRYVSTHDVAYWARSFAQDLERACKDHYSRRCWAIGFGLNFRVIALS 569
ZmTPSII.4.2_GRMZM2G008226_T01            LTESEKRLRHEKHYRYVSTHDVAYWARSFAQDLERACKDHYSRRCWAIGFGLNFRVIALS 569
OsTPS11_LOC_Os09g20990.1                 LTQSERKLRHDKHYRYVKTHDVAYWARSFSQDLDRACKDHYSRRCWTTGFGLNFRVIALS 570
ZmTPSII.4.1_GRMZM2G527891_T01            LTRYEKNLRHEKHYRYVRSHDVAYWARSFDQDLDKACIEQYSQRCWTTGFGLNFRVIALS 571
AtTPS10_AT1G60140.1                      MSDFEKQLRHKKHFHYISTHDVGYWARSFSQDLERASRDHYSKRCWGVGWGLGFRLVALS 571
AtTPS8_AT1G70290.1                       MSETEKQLRHEKHYHYISTHDVGYWAKSFMQDLERACRDHYSKRCWGIGFGLGFRVLSLS 566
AtTPS9_AT1G23870.1                       MGETEKRLRHEKHYHYVSTHDVGYWAKSFMQDLERACREHYNKRCWGIGFGLSFRVLSLS 571
OsTPS9_LOC_Os09g25890.1                  MNVAEKQARHVKHYTYLKLHDVIVWARSFAADLQLACKDRSTMRTIGMGIGPSYRVVAVD 563
OsTPS5_LOC_Os02g54820.1                  MPEPEQRLRHEKHYKYVSTHDVAYWAKSFDQDLQRACKDHFSRRHWGIGFGMSFKVVALG 557
ZmTPSII.5.3_GRMZM2G312521_T01            MPEAEQRLRHEKHYKYVSTHDVAYWARSFDSDLQRACKDHFSRRHWGIGFGMSFKVVALG 689
ZmTPSII.5.4_GRMZM2G122231_T01            MPEAEQRLRHEKHYKYVSTHDVAYWARSFDSDLQRACKDHFSRRHWGIGFGMSFKVVALG 558
OsTPS8_LOC_Os08g34580.1                  MSDGEKQLRQEKHYRYVSTHDVVYWAQSFDQDLQKACKDNSSMVILNFGLGMGFRVVALG 536
ZmTPSII.5.1_GRMZM2G007736_T02            FNGREKQVRQEKHYRFVSTHDIAYWGRSLDQDLQRASKDHASMKFMSVGLAMSYHIVVLS 663
ZmTPSII.5.2_GRMZM2G079928_T01            LNERDKKILHAKHYMYVVKHDIAYWGRSLDQNLQKASMDHASMNFLSVGLAMNFRIVVLD 573
CAA48913.1                               MSLAERISRHAEMLDVIVKNDINHWQECFISDLKQIVPRSAESQQRDKVA--TFPKLA-- 474
XP_028127761.1                           MPEDERILRMNYLRRREKLNDVNYWTKSFLSAMGSLLTQEDHDDIGSTNM----PAVTLD 509
ART29424.1                               MPEDERILRMNYLRRREKLNDVNYWTKSFLSAMGSLITQEDHDDIGTTSM----PAVTLD 503
pdb|5HUU|B                               LPEEKREFNFKKLFTYISKYTSGFWGESFVKELYKCNPQKSLRD---------------- 478
tr|Q01GJ2|Q01GJ2_OSTTA                   MPEAEKIERHRSSFSHVSTHTAQAWADTFISELNDTHVEAE----------LRQKRIPPH 626
AtTPS1_AT1G78580.1                       MTAEEREKRHRHNFHHVKTHTAQEWAETFVSELNDTVIEAQ----------LRISKVPPE 574
OsTPS1_LOC_Os05g44210.1                  MSSDEREKRHRHNYAHVTTHTAQDWAETFVCELNETVAEAQ----------LRTRQVPPD 610
ZmTPSI.1.1_GRMZM2G068943_T02             MPSDEREKRHRHNYAHVTTHTAQDWAETFVFELNDTVAEAL----------LRTRQVPPG 625
SCA3|SP803280_c107577_g2_i1_m.97794      MPSDEREKRHRHNYAHVTTHTAQDWAETFVFELNDTVAEAL----------LRTRQVPPG 610
SCA1_2|Sh_239M11_p000040                 MPSDEREKRHRHNYAHVTTHTAQDWAETFVFELNDTVAEAL----------LRTRQVPPG 611
ZmTPSI.1.2_GRMZM2G001304_T01             MPSDEREKRHRHNYAHVTTHTAQDWAETFVFELNDTVAEAL----------LRTRQVPPG 211
AtTPS4_AT4G27550.1                       MSHEEKERKHKINFQYVKTHSTQQWADDFMKLTLTNILCSKLIEITTSAELGAGLAATLE 495
AtTPS2_AT1G16980.1                       MPAEERETRHRSNFQYVCTHSAEKWGLDFMSELNGIIPESE---------MQ-MRKIPLQ 493
AtTPS3_AT1G17000.1                       MPYEERETRHRVNFKYVKTHSAEKWGFDFLSELNDAFDESE---------LQ-IRKIPHE 471
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tr|Q00WH8|Q00WH8_OSTTA                        --------PNALAREGDGKFKELAVGKL-LTVFLDMDGTLTPIVDEPDKAF--------- 96
SCA5|SCEZRZ3019C12.g.p1                       --------SSALTSF--EAISDLAGSKR-LALFLDMDGTLSPIVDNPENAL--------- 198
SCA3|SP803280_c110556_g1_i2_m.112799          --------PSALTSF--EAISDLAGSKR-LALFLDMDGTLSPIVDNPENAL--------- 139
SCA1_2|Sh_210F11_p000130                      --------PSALTSF--KQIVANAQGRG-IAVFLDMDGTLSPIVDDPDKAF--------- 134
SCA3|SP803280_c104339_g1_i3_m.83754           --------PSALTSF--KQIVANAQGRR-IAVFLDMDGTLSPIVDDPDKAF--------- 134
SCA4|evm.model.SCSP803280_000048991.1         --------PSALDRF--EALAAAAKGKQ-VAVFLDMDGTLSPIVEDPDRAV--------- 123
SCA3|SP803280_c109234_g1_i4_m.105886          --------PSALAQF--ESLLAAVKGKQ-IVMFLDMDGTLSPIVEDPDRAV--------- 124
SCA3|SP803280_c102057_g1_i4_m.74365           --------PSALGMF--DQVVAASKGKQ-IVVFLDMDGTLSPIVDDPDAAY--------- 128
SAC2_1|SUGdenovo0588378.p1                    --------PSALGMF--DQVVAASKGKQ-IVVFLDMDGTLSPIVDDPDAAY--------- 53
5DXF_1|Chains                                 ------------------------------------------------------------ 534
XP_721536.1                                   ----ALNRPLLLNNYKE--------SQR-RLFLFDMDGTLTPIVQDPAAA---------- 574
tr|A0A090N4I6|A0A090N4I6_OSTTA                SQFRKLDTPTVVADYLK--------AKR-RKLVIDMDGTLV-PLVSYAQPP--------- 604
AtTPS5_AT4G17770.1                            PSFKKLSIEHIVSAYKR--------TKN-RAILLDMDGTMV-QPGSIRTTP--------- 612
AtTPS6_AT1G68020.2                            QSFRKLSMEHIVSAYKR--------TKT-RAILLDMDDTLM-PQGSIDKRP--------- 623
OsTPS4_LOC_Os03g12360.1                       LSFRKLAMEHIVMAYRR--------AKT-RAILLDMDGTLM-PQA-INKSP--------- 615
ZmTPSII.2.2_GRMZM2G099860_T01                 LTFRKLSLENILMAYRR--------AKT-RAILLDMDGTLM-PQA-INKSP--------- 611
SCA1_2|Sh_203E09_p000020                      LHFRKLSLESILMAYRR--------AKT-RAILLDMDGTLM-PQA-INKSP--------- 512
SAC2_1|SUGdenovo0315072.p1                    LHFRKLSLESILMAYRR--------AKT-RAILLDMDGTLM-PQA-INKSP--------- 611
SCA3|SP803280_c117830_g1_i1_m.154722          PNFKKLAVEHLVSAYRR--------TTK-RVILLDMDGTLM-PQTSFGKSP--------- 612
OsTPS10_LOC_Os09g23350.1                      PNFKKLAVEHLVSAYRR--------TTT-RIILLDMDGTLM-PQTSFGKSP--------- 635
ZmTPSII.2.1_GRMZM2G019183_T02                 PNFKKLAVEHLVLAYRR--------TKK-RVILLDMDGTLM-PQTSLGKSP--------- 625
AtTPS7_AT1G06410.1                            PNFRKLSIPCIVSDYKR--------AKS-RAILLDMDGTLM-PQNSINKAP--------- 606
OsTPS3_LOC_Os01g53000.1                       RNFKKLTVDSIVTDYKN--------SKS-RVILLDMDGTLV-PQTTINRTP--------- 628
OsTPS6_LOC_Os05g44100.1                       PHFTKLNFDSIIMSYER--------SKS-RAIFLDMDGTLV-PQASLNKNP--------- 632
OsTPS2_LOC_Os01g54560.1                       PHFTKLNMDSIVMAYER--------SES-RAIFLDMDGTLV-PQTSISRTP--------- 645
ZmTPSII.3.3_GRMZM2G118462_T01                 PHFTKLNMDSIINAYEL--------SES-RAILLDMDGTLV-PQTSLNKEP--------- 645
SCA2_1|c95057f1p13337.p1                      PHFTKLNMDLIVNAYEI--------SES-RAILLDMDGTLV-PQTSINKEP--------- 608
SCA4|evm.model.SCSP803280_000001563.1         PHFTKLNMDLIVNAYEI--------SES-RAILLDMDGTLV-PQTSINKEP--------- 643
ZmTPSII.3.1_GRMZM2G304274_T01                 PHFRKLNMDSIVNAYEI--------SES-RAILLDMDGTLV-PQTSINKEP--------- 645
ZmTPSII.3.2_GRMZM2G123277_T01                 AHFRKLNMDSIVNAYEI--------SGS-RAILLDMDGTLV-PQTSINKEP--------- 645
AtTPS11_AT2G18700.1                           PNFRRLCGETIVPAYRR--------SSS-RLILLDMDGTMM-DQDTLDKRP--------- 604
OsTPS7_LOC_Os08g31980.1                       PGFRKLSLEHFASSYNK--------ATR-RAIFLDMDGTLV-PQSSINKAP--------- 610
ZmTPSII.4.3_GRMZM2G366659_T01                 PGFRKLSSEHFVSSYNR--------ASR-RAIFLDMDGTLV-PQSSINKAP--------- 610
SCA2_1|c94760f1p43082.p1                      PGFRKLSSEHFVSSYNK--------ASR-RAIFLDMDGTLV-AQSSINKAP--------- 610
ZmTPSII.4.2_GRMZM2G008226_T01                 PGFRKLSSEHFVSSYNK--------ASR-RAIFLDMDGTLV-PQSSINKAP--------- 610
OsTPS11_LOC_Os09g20990.1                      PGFRRLSLEHFASSYKK--------TNR-RLIFMDMDGTLV-PQSSVNKVP--------- 611
ZmTPSII.4.1_GRMZM2G527891_T01                 PGFRRLSLEHLASSYKK--------ANR-RMIFLDMDGTLV-PQTSHDKSP--------- 612
AtTPS10_AT1G60140.1                           PNFRRLSIEQTVSAYRR--------SSK-RAIFLDMDGTLV-PETSIVKDP--------- 612
AtTPS8_AT1G70290.1                            PSFRKLSVEHIVPVYRK--------TQR-RAIFLDMDGTLV-PESSIVQDP--------- 607
AtTPS9_AT1G23870.1                            PSFRKLSIDHIVSTYRN--------TQR-RAIFLDMDGTLV-PESSIIKTP--------- 612
OsTPS9_LOC_Os09g25890.1                       AAFKKLPPELVNLSYRAAAAAAAAGGGGG-RLILLDMDGTLE-PTGAFDNAP--------- 612
OsTPS5_LOC_Os02g54820.1                       PNFRRLSVDHIVPSYRK--------SDN-RLILLDMDGTVM-PEGSIDKAP--------- 598
ZmTPSII.5.3_GRMZM2G312521_T01                 PNFRRLSVEHIVPSYRR--------TEN-RLILLDMDGTVM-PENSIDRTP--------- 730
ZmTPSII.5.4_GRMZM2G122231_T01                 PNFRRLSVEHIVPSYRR--------TDN-RLILLDMDGTVM-PENSIDRTP--------- 599
OsTPS8_LOC_Os08g34580.1                       PSFKKLSPELIDQAYRQ--------TGN-RLILLDMDGTVM-PQGLINKAP--------- 577
ZmTPSII.5.1_GRMZM2G007736_T02                 PNFQKLSPEHINPSYQR--------AGN-RLILLDMDETVMFHPGLLDRHP--------- 705
ZmTPSII.5.2_GRMZM2G079928_T01                 PNFQKLSPEHINPSYHR--------TGN-RLILLDMDGTVMVPQGLITRHP--------- 615
CAA48913.1                                    ------------------------------------------------------------ 474
XP_028127761.1                                -----D-FDEYLSKYIG--------NTHKLALLLDMDGTLAPIAPHP-----------DL 544
ART29424.1                                    -----D-FDEYLAKYIG--------NTHKLALLLDMDGTLAPIAPHP-----------DL 538
pdb|5HUU|B                                    ------------------------------------------------------------ 478
tr|Q01GJ2|Q01GJ2_OSTTA                        -----LSPDVVTRSFQK--------GKQ-RLIILGMNATLTDPMDSRSKNRPAIESKKNR 672
AtTPS1_AT1G78580.1                            -----LPQHDAIQRYSK--------SNN-RLLILGFNATLTEPVDNQGRR--GDQIKEMD 618
OsTPS1_LOC_Os05g44210.1                       -----LPSQAAIQQYLH--------SKN-RLLILGFNSTLTEPVESSGRRG-GDQIKEME 655
ZmTPSI.1.1_GRMZM2G068943_T02                  -----LPSQMAIQQYLR--------SKN-RLLILGFNSTLTEPVESSGRRG-GDQIKEME 670
SCA3|SP803280_c107577_g2_i1_m.97794           -----LPSQTAIQQYLR--------SKN-RLLILGFNSTLTEPVESSGRRG-GDQIKEME 655
SCA1_2|Sh_239M11_p000040                      -----LPSQTAIQQYLR--------SKN-RLLILGFNSTLTEPVESSGRRG-GDQIKEME 656
ZmTPSI.1.2_GRMZM2G001304_T01                  -----LPGQTAIQQYLR--------SKN-RLLILGFNSTLTEPVESSGRRG-GDQIKEME 256
AtTPS4_AT4G27550.1                            -----LPEHDVIQQYSK--------SNN-RLLILGFYGTLTQPMKNQERRG-----DGMN 536
AtTPS2_AT1G16980.1                            -----LPEQDVIQQYSQ--------SNN-RLIILGFFGTLAEPMNSGT--------KEMD 531
AtTPS3_AT1G17000.1                            -----LPQQDVIQRYSL--------SNN-RLIILGFYGTITEPRNSLS--------KEMD 509
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D25 D27 P32 V34

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tr|Q00WH8|Q00WH8_OSTTA                        --MDDEVREAVRQCA--RRFPTAIISGRSRHKVSQFVQLE--ELYYAGSHGLDIAGPTRT 150
SCA5|SCEZRZ3019C12.g.p1                       --MSDEMRAAVRHVA--SLFPTAIISGRSRDKVFDFVKLN--ELYYAGSHGMDIMGPVRK 252
SCA3|SP803280_c110556_g1_i2_m.112799          --MSDEMRAAVRHVA--SLFPTAIISGRSRDKVFDFVKLN--ELYYAGSHGMDIMGPVRK 193
SCA1_2|Sh_210F11_p000130                      --MSPVMRAAVRNVA--KHFPTAIVSGRSRKKVFEFVKLK--ELYYAGSHGMDIVTSVAA 188
SCA3|SP803280_c104339_g1_i3_m.83754           --MSPVMRAAVSNVA--KHFPTAIVSGRSRKKVFEFVKLK--ELYYAGSHGMDIVTSVAA 188
SCA4|evm.model.SCSP803280_000048991.1         --MTDEMREAVRGVA--ARFPTAIVSGRCRDKVFSFVRLA--ELYYAGSHGMDIRGPTAD 177
SCA3|SP803280_c109234_g1_i4_m.105886          --MSEEMREAVRRVA--EHFPTAIVSGRCRDKVLNFVKLT--ELYYAGSHGMDIQGPANH 178
SCA3|SP803280_c102057_g1_i4_m.74365           --MSDTMRRAVRSVA--KHFPTAIVSGRCRDKVFEFVKLA--ELYYAGSHGMDIKGPAKG 182
SAC2_1|SUGdenovo0588378.p1                    --MSDTMRRAVRSVA--KHFPTAIVSGRCRDKVFEFVKLA--ELYYAGSHGMDIKGPAKG 107
5DXF_1|Chains                                 ------------------------------------------------------------ 534
XP_721536.1                                   -IPSDKLNRILDVLSSDPKNQIWIISGRDQAFLEKWMGNK--NVGLSAEHGCFMKDIGS- 630
tr|A0A090N4I6|A0A090N4I6_OSTTA                ---SAHLLSLLTVLTSDQANEVCIVSGRERGTLDKWFGNIP-RLWMVAEHGYWFRKGSD- 659
AtTPS5_AT4G17770.1                            ---TRETIEILNNLSSDPKNIVYLVSGKDRRTLTEWFSSCD-DLGLGAEHGYFIRPNDG- 667
AtTPS6_AT1G68020.2                            ---SSKSIDILNTLCRDKGNLVFIVSAKSRETLSDWFSPCE-KLGIAAEHGYFLRLRKA- 678
OsTPS4_LOC_Os03g12360.1                       ---SANSVETLTSLCRDKSNKVFLCSGFEKGTLHDWF-PCE-NLGLAAEHGYFLRSSRD- 669
ZmTPSII.2.2_GRMZM2G099860_T01                 ---STESVRILNSLCRDKDNVVYLCSGYDRRTLHEWF-PCE-NLGIAAEHGYFLRCKRD- 665
SCA1_2|Sh_203E09_p000020                      ---STESVRILNSLCGDKNNVVYLCSGYDRRTLHEWF-PCE-NLGIAAEHGYFLRCKRD- 566
SAC2_1|SUGdenovo0315072.p1                    ---STESVRILNSLCGDKNNVVYLCSGYDRRTLHEWF-PCE-NLGIAAEHGYFLRCKRD- 665
SCA3|SP803280_c117830_g1_i1_m.154722          ---TSRTIDVLNSLCRDKNNMVFLVSAKSRMTLNEWFLPCE-SLGLAAEHGYFLRLRRD- 667
OsTPS10_LOC_Os09g23350.1                      ---SSKTIDMLNSLSRDQNNMVFLVSIKKRSTLEEWFSSCD-NLGLAAEHGYFLRLKRD- 690
ZmTPSII.2.1_GRMZM2G019183_T02                 ---TSRTIDMLNSLCRDRNNMVFLVSAKSRMTLNEWFLPCE-SLGLAAEHGCFLRLRRD- 680
AtTPS7_AT1G06410.1                            ---SQEVLNFLDALCEDKKNSIFIVSGRGRESLSKWFTPCK-KIGIAAEHGYFLKWSGS- 661
OsTPS3_LOC_Os01g53000.1                       ---NESVVKIMNALCDDKKNVVFIVSGRGRDSLEKWFSPCQ-DLGIAAEHGYFMRWTRD- 683
OsTPS6_LOC_Os05g44100.1                       ---SEELLRIINTLCADRNNTVFIVSGRSKDDLSKKLISCP-KLGIAAEHGYFLRWTRD- 687
OsTPS2_LOC_Os01g54560.1                       ---SAEVLRIINTLCSDRRNKVFLVSGRRRDKLGEWFSSCP-DLGIAAEHGYFLRWTRD- 700
ZmTPSII.3.3_GRMZM2G118462_T01                 ---SPQVLSIINTLCSDSRNIVFLVSGRDKDTLGKWFSSCP-RLGIAAEHGYFLRWSRE- 700
SCA2_1|c95057f1p13337.p1                      ---SPEVLSIINILCSDSRNIVFLVSGRDKDTLGKWFSSCP-KLGIAAEHGYFLRWSRE- 663
SCA4|evm.model.SCSP803280_000001563.1         ---SPEVLSIINILCSDSRNIVFLVSGRDKDTLGKWFSSCP-KLGIAAEHGYFLRWSRE- 698
ZmTPSII.3.1_GRMZM2G304274_T01                 ---SPEVLNIINTLCSDSRNIVFLVSGRDKDTLGKWFSSCP-KLGIAAEHGYILRWSSK- 700
ZmTPSII.3.2_GRMZM2G123277_T01                 ---SPEVLNIINTLCSDSRNIVFLVSGRDKDMLGKWFSSCP-KLGIAAEHGYFLRWSSE- 700
AtTPS11_AT2G18700.1                           ---SDDLISLLNRLCDDPSNLVFIVSGRGKDPLSKWFDSCP-NLGISAEHGYFTRWNSN- 659
OsTPS7_LOC_Os08g31980.1                       ---SDELITILNSLCDDPKNDVFIVSGRARSLLDEWFAPCQ-KLGIAAEHGYFVRWNKA- 665
ZmTPSII.4.3_GRMZM2G366659_T01                 ---SEEVISILNTLCNDPKNVVFIVSGRGRDSLDEWFSPCE-KLRLAAEHGYFIRWSKE- 665
SCA2_1|c94760f1p43082.p1                      ---SEEVISILNTLCNEPKNVVFIVSGRGHDSLDEWFSPCE-KLGVAAEHGYFIRWSKG- 665
ZmTPSII.4.2_GRMZM2G008226_T01                 ---SEEVISVLNTLCNDPKNIVFIVSGRGRDSLDEWFSPCE-KLGLAAEHGYFIRWSKE- 665
OsTPS11_LOC_Os09g20990.1                      ---SAEVISILTSLCNDPKNCVFIVSGRDRTTLSEWFASCD-KLGIAAEHGYFIRWNKE- 666
ZmTPSII.4.1_GRMZM2G527891_T01                 ---SAELISTLNSLCSDMKNTVFIVSGRGRDSLSEWFASCE-NLGIAAEHGYFIRWNKA- 667
AtTPS10_AT1G60140.1                           ---SAEVISALKALCSDPNNTIFIVSGRGKVSLSEWLAPCE-NLGIAAEHGYFTRWNKS- 667
AtTPS8_AT1G70290.1                            ---SNEVVSVLKALCEDPNNTVFIVSGRGRESLSNWLSPCE-NLGIAAEHGYFIRWKSK- 662
AtTPS9_AT1G23870.1                            ---NAEVLSVLKSLCGDPKNTVFVVSGRGWESLSDWLSPCE-NLGIAAEHGYFIRWSSK- 667
OsTPS9_LOC_Os09g25890.1                       ---SDAVIVILDELCSDPNNVVFIVSGRSKDDLERWLAPCA-NLGIAAEHGYFIRWSRD- 667
OsTPS5_LOC_Os02g54820.1                       ---SNEVISVLNRLCEDPKNRVFIVSGRGKDELGRWFAPCE-KLGIAAEHGYFTRWSRD- 653
ZmTPSII.5.3_GRMZM2G312521_T01                 ---SSEVISVLNRLCEDPKNRVFIVSGRGKDELSRWFAPCE-KLGIAAEHGYFTRWSRD- 785
ZmTPSII.5.4_GRMZM2G122231_T01                 ---SSEVISVLNRLCEDPKNRVFIVSGRGKDELSRWFAPCE-KLGIAAEHGYLTRWSRD- 654
OsTPS8_LOC_Os08g34580.1                       ---SEEVIRTLNELCSDPMNTVFVVSGRGKDELAEWFAPCDEKLGISAEHGYFTRWSRD- 633
ZmTPSII.5.1_GRMZM2G007736_T02                 ---SQRLIGILNELCSDPKNTVFVVSGRSKDELARWLEPCE-RLGISAEHGYFTRWSRY- 760
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ZmTPSII.5.2_GRMZM2G079928_T01      ---SQELVSVLNELCSDPMNTVFVVSGRSKDELAGWLAPCE-KLGISAEHGYFTRWSRD- 670
CAA48913.1                         ------------------------------------------------------------ 474
XP_028127761.1                     AIIPAETKNVLQRLSNMSDCYIAIVSGRNVNNVRDMVGID--GITYAGNHGLEILHPDG- 601
ART29424.1                         AIIPPETKNVLQRLSNISDVYIAIISGRNVNNVKQMVGIE--GITYAGNHGLEILHPDG- 595
pdb|5HUU|B                         ------------------------------------------------------------ 478
tr|Q01GJ2|Q01GJ2_OSTTA             HKIHPISQECISRLCDDPNTTVCIFSGSDRNKLAQIFAMLP-KVWIAAENGVFIRPPLQG 731
AtTPS1_AT1G78580.1                 LNLHPELKGPLKALCSDPSTTIVVLSGSSRSVLDKNFGEY--DMWLAAENGMFLRLTN-- 674
OsTPS1_LOC_Os05g44210.1            LKLHPELKGPLRALCEDEHTTVIVLSGSDRSVLDENFGEF--NMWLAAEHGMFLRPTN-- 711
ZmTPSI.1.1_GRMZM2G068943_T02       LKLHPDLKGPLRALCEDERTTVIVLSGSDRSVLDENFGEF--KMWLAAEHGMFLRPTY-- 726
SCA3|SP803280_c107577_g2_i1_m.97794 LKLHPDLKGPLRALCEDEHTTVIVLSGSDRSVLDENFGEF--KMWLAAEHGMFLRPTY-- 711
SCA1_2|Sh_239M11_p000040           LKLHPDLKGPLRALCEDEHTTVIVLSGSDRSVLDENFGEF--KMWLAAEHGMFLRPTY-- 712
ZmTPSI.1.2_GRMZM2G001304_T01       LKLHPDLKGPLGALCEDERTTVIVLSGSDRSVLDENFGEF--KMWLAAEHGMFLRPTY-- 312
AtTPS4_AT4G27550.1                 LELHPQLKERLKELCSDPKTTVVVLSRSEKCILDKNFGEY--NMWLAAENGMFLRHTS-- 592
AtTPS2_AT1G16980.1                 LKLNPELKGTLKALCNDPKTTVVVLSRSGKNILNKNFGES--NIWLAAENGMFEKQTT-- 587
AtTPS3_AT1G17000.1                 LXLNPELKETLKALCNDPKTTVVVLSRSGKNILDKNFGEY--KIWLAAENGMFLKHTT-- 565
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S65 R67

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tr|Q00WH8|Q00WH8_OSTTA             SDG----------TPITATALAHQPAQWARDVMDRVTNDLIEKT-RDIPGANIEHNMFCV 199
SCA5|SCEZRZ3019C12.g.p1            TTDSNGVECIRSTDAHGKEVNLFQPASEFLPMITEVYEKLGESV-KDIDGARMEDNKFCV 311
SCA3|SP803280_c110556_g1_i2_m.112799 TTDSNGVECIWSTDAHGKEVNLFQPASEFLPMITEVYEKLGESV-KDIDGARMEDNKFCV 252
SCA1_2|Sh_210F11_p000130           HS-----------TEKCKEANLFQPACEFLPMIDEVSKSLLEVT-REIEGARVENNKFCV 236
SCA3|SP803280_c104339_g1_i3_m.83754 HS----------TEKCKEANLFQPACEFLPMIDEVSKSLLEVT-REIEGARVENNKFCV 236
SCA4|evm.model.SCSP803280_000048991.1 PNH---------HGKA-ESSVLCQPASEFLPVMEEVYAALVSQVEPSIPGAKVENNKFCL 227
SCA3|SP803280_c109234_g1_i4_m.105886 LQ-------------ANAEVVHYQAGSEFLPVIEEVFGTLTAKM-EAIAGAKVEHNKYCL 224
SCA3|SP803280_c102057_g1_i4_m.74365 SRH---------TKAAKAKGVLFQPASQFLPMIEQVHDSLVEKT-KCIPGAKVENNKFCV 232
SAC2_1|SUGdenovo0588378.p1         SRH---------TKAAKAKGVLFQPASQFLPMIEQVHDSLVEKT-KCIPGAKVENNKFCV 157
5DXF_1|Chains                      ------------------------------------------------------------ 534
XP_721536.1                        ------KEWVNL---------AASFDMSWQEKVDDIFKYYTEKT--PG--SNIERKKVAL 671
tr|A0A090N4I6|A0A090N4I6_OSTTA     ------VAWKEL-----APIGTDTSVHEWKETVLPILEQYSEAT--DG--SFIQIKESAY 704
AtTPS5_AT4G17770.1                 ------TDWETS---------SLVSGFEWKQIAEPVMRLYTETT--DG--STIEIKETAL 708
AtTPS6_AT1G68020.2                 ------VEWENC---------VAAVDCSWKQIAEPVMELYTETT--DG--STIEIKETAL 719
OsTPS4_LOC_Os03g12360.1            ------AEWEIS---------IPPADCSWKQIAEPVMCLYRETT--DG--SIIENRETVL 710
ZmTPSII.2.2_GRMZM2G099860_T01      ------AEWKTC---------VAATDCSWKQIAEPVMCLYRETT--DG--STIEIRETVL 706
SCA1_2|Sh_203E09_p000020           ------AEWKTC---------VTATDCSWKQIAEPVMCLYRETT--DG--STIENRETVL 607
SAC2_1|SUGdenovo0315072.p1         ------AEWKTC---------VTATDCSWKQIAEPVMCLYRETT--DG--STIENRETVL 706
SCA3|SP803280_c117830_g1_i1_m.154722 ------AEWETC---------VPVIDCSWKQIAEPVMKTYTETT--DG--STIENKETAI 708
OsTPS10_LOC_Os09g23350.1           ------AEWETC---------VPVTDRSWKQIAEPVMKTYTETT--DG--STIEIKETAI 731
ZmTPSII.2.1_GRMZM2G019183_T02      ------AEWETC---------VPVIDCSWKQIAEPVMKTYTETT--DG--STIEIKETAI 721
AtTPS7_AT1G06410.1                 ------EEWETC---------GQSSDFGWMQIVEPVMKQYTEST--DG--SSIEIKESAL 702
OsTPS3_LOC_Os01g53000.1            ------EQWQLN---------NQCSEFGWMQMAKPVMNLYTEAT--DG--SYIEIKESAL 724
OsTPS6_LOC_Os05g44100.1            ------EEWQTT---------AQTSDFGWMQMAKPVMDLYTEST--DG--STIEIKETAL 728
OsTPS2_LOC_Os01g54560.1            ------EEWQTC---------TQTSDFGWMEMAKPVMNLYTEAT--DG--SYIEIKESAL 741
ZmTPSII.3.3_GRMZM2G118462_T01      ------EEWQTC---------TQALDFGWMQMAKPVMNLYTEAT--DG--SYIEAKESAL 741
SCA2_1|c95057f1p13337.p1           ------EEWQTC---------TQALDFGWMQMATPVMKLYTEAT--DG--SYIEIKESAL 704
SCA4|evm.model.SCSP803280_000001563.1 ------EEWQTC---------TQALDFGWMQMATPVMKLYTEAT--DG--SYIEIKESAL 739
ZmTPSII.3.1_GRMZM2G304274_T01      ------EEWQTC---------TQAMDFGWMQMAKPVMNLYTEAT--DG--SYIERKESAL 741
ZmTPSII.3.2_GRMZM2G123277_T01      ------EEWQTC---------TQAMDFGWMQMAKPVMNLYTEAT--DG--SYIEIKESAL 741
AtTPS11_AT2G18700.1                ------SPWETS---------ELPADLSWKKIAKPVMNHYMEAT--DG--SFIEIKESAM 700
OsTPS7_LOC_Os08g31980.1            ------AEWESS---------YPNHDFEWKHIAEPVMQVYTETT--DG--SSIEIKESAL 706
ZmTPSII.4.3_GRMZM2G366659_T01      ------AAWESS---------YSSPRQEWKHIAEPVMQVYTETT--DG--SSVEIKESAL 706
SCA2_1|c94760f1p43082.p1           ------AAWESS---------YSSPQQEWKHIAEPIMQVYTETT--DG--SSIEIKESAL 706
ZmTPSII.4.2_GRMZM2G008226_T01      ------AAWESS---------YSRPQQEWKHIAEPVMQVYTETT--DG--SSIEIKESAL 706
OsTPSI1_LOC_Os09g20990.1           ------GEWETS---------SSAQDCEWKNIAEPIMEVYKETT--DG--SAIEIKESGL 707
ZmTPSII.4.1_GRMZM2G527891_T01      ------AEWETS---------FSGIYSEWKLIADPIMHVYMETT--DG--SFIEIKESAL 708
AtTPS10_AT1G60140.1                ------SDWETS---------GLSDDLEWKKVVEPIMRLYTETT--DG--SNIEAKESAL 708
AtTPS8_AT1G70290.1                 ------DEWETC---------YSPTDTEWRSMVEPVMRSYMEAT--DG--TSIEIKESAL 703
AtTPS9_AT1G23870.1                 ------KEWETC---------YSSAEAEWKTMVEPVMRSYMDAT--DG--STIEYKESAL 708
OsTPS9_LOC_Os09g25890.1            ------APWETM-----ASK-QLAAAMEWKAAAKNVMRHYAEAT--DG--SYIEAKETGM 711
OsTPS5_LOC_Os02g54820.1            ------SAWETC---------GLAVDFDWKKTAEPVMRLYKEAT--DG--STIEIKESAL 694
ZmTPSII.5.3_GRMZM2G312521_T01      ------APWEAS---------ALAADLDWKNTAEPVMRLYTEAT--DG--SYIEHKESGM 826
ZmTPSII.5.4_GRMZM2G122231_T01      ------APWDTS---------GLAADFDWKKTAEPVMQLYTEAT--DG--SYIEHKESAI 695
OsTPS8_LOC_Os08g34580.1            ------SPWESC---------KLVTHFNWKNIAGPVMKHYSDAT--DG--SYIEVKETSL 674
ZmTPSII.5.1_GRMZM2G007736_T02      ------SPWESP---------DLKVDYGWKKMVEPVMDLYVAVT--DG--SSVEIKETAL 801
ZmTPSII.5.2_GRMZM2G079928_T01      ------SPWESP---------KLLLDNDWKNIVEPVMKYYCDVT--DG--SYIEAKETAL 711
CAA48913.1                         ------------------------------------------------------------ 474
XP_028127761.1                     ------TKFVHP-----MP---TE----FHDKVGDLMRQLQEKV--CREGAWVENKGALL 641
ART29424.1                         ------TKFVHP-----MP---TE----FHDKVGELLRQLQERV--CRDGAWIENKGALL 635
pdb|5HUU|B                         ------------------------------------------------------------ 478
tr|Q01GJ2|Q01GJ2_OSTTA             KNGTETPKWMT------MI---ETTNLDWLESVEVVFEYFCERT--PR--SHVEIRETSL 778
AtTPS1_AT1G78580.1                 ------GEWMTT-----MP---EHLNMEWVDSVKHVFKYFTERT--PR--SHFEIRDTSL 716
OsTPS1_LOC_Os05g44210.1            ------GEWMTT-----MP---EHLNMDWVDSVKNVFEYFTERT--PR--SHFEHRETSF 753
ZmTPSI.1.1_GRMZM2G068943_T02       ------GEWMTT-----MP---EHLNMDWVDSVKHVFEYFTERT--PR--SHFEHRETSF 768
SCA3|SP803280_c107577_g2_i1_m.97794 ------GEWMTT-----MP---EHLNMDWVDSVKHVFEYFTERT--PR--SHFEHRETSF 753
SCA1_2|Sh_239M11_p000040           ------GEWMTT-----MP---EHLNMDWVDSVKHVFEYFTERT--PR--SHFEHRETSF 754
ZmTPSI.1.2_GRMZM2G001304_T01       ------GEWMTT-----MP---EHLNMDWVDSVKHVFEYFTERT--PR--SHFEHRETSF 354
AtTPS4_AT4G27550.1                 ------GEWVTR-----IP---EHMNLEWIDGVKHVFKYFTERT--PG--SYIEISEASL 634
AtTPS2_AT1G16980.1                 ------GEWVTN-----MP---QNVNLDWVDGVKNVFKYFTDRT--PR--SYFEASETSL 629
AtTPS3_AT1G17000.1                 ------EEWVTN-----MP---QNMNLDWVDGLKNVFKYFTDRT--PR--SFFEASKTSL 607
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E131 K133

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tr|Q00WH8|Q00WH8_OSTTA             SAHNRGVSDADRPRFQKIVDE-----IVASDECLIKHDGKMVWEVRPRV---AWDKGKAL 251
SCA5|SCEZRZ3019C12.g.p1            SVHNRNVAEDDYKKVFHRVSA-----VLEDYPCLRLTHGRKVFEVRPVI---DWNKGKAV 363
SCA3|SP803280_c110556_g1_i2_m.112799 SVHNRNVAEDDYKKVFHRVSA-----VLEDYPCLRLTHGRKVFEVRPVI---DWNKGKAV 304
SCA1_2|Sh_210F11_p000130           SVHNRNVAEKDWKVVAALVNQ-----VLEAFPRLKVTNGRMVLEVRPVI---DWDKGKAV 288
SCA3|SP803280_c104339_g1_i3_m.83754 SVHNRNVAEKDWKVVAALVNQ-----VLEAFPRLKVTNGRMVLEVRPVI---DWDKGKAV 288
SCA4|evm.model.SCSP803280_000048991.1 SVHERCVEEHAWAALFEQVRA-----VLKDYPGLRLTQGRKVLEVRPMI---RWDKGKAL 279
SCA3|SP803280_c109234_g1_i4_m.105886 SVHERCVREEEWNAVNEEVRS-----VLKDYPNLKLTHGRKVLEIRPSI---KWDKGKAL 276
SCA3|SP803280_c102057_g1_i4_m.74365 SVHERCVDEKSWSTLADMVKS-----VLKDYPKLKLTQGRMVFEVRPSI---KWDKGKAL 284
SAC2_1|SUGdenovo0588378.p1         SVHERCVDEKSWSTLADMVKS-----VLKDYPKLKLTQGRMVFEVRPSI---KWDKGKAL 209
5DXF_1|Chains                      ------------------------------------------------------------ 534
XP_721536.1                        TWHNRRADPDLGNFQAEKCMKELNDTVAK-EYDVEVMAGKANIEV-RPK---FVNKGEIV 726
tr|A0A090N4I6|A0A090N4I6_OSTTA     VWHNRDADPDFGAWQAKELLDHLDS-VLH-GDGVDVISGNGTVEI-KPK---GVHKGLVI 758
AtTPS5_AT4G17770.1                 VWNNQFADPDFGSCQAKELMEHLES-VLT-NDPVSVKTGQQIVEV-KPQ---GVNKGLVA 762
AtTPS6_AT1G68020.2                 VWSYEDADPDFGSCQAKELLDHLES-VLA-NEPVTVKRGQNYVEV-KPQ---GVSKGLIA 773
OsTPS4_LOC_Os03g12360.1            VWNYEDADPDFGSCQAKELVDHLES-VLA-NEPVSVKSTGHSVEV-KPQ---GVSKGLVA 764
ZmTPSII.2.2_GRMZM2G099860_T01      VWNYEDADPDFGSCQAKELVDHLES-VLA-NEPVSVKTTPHSVEV-KPQ---GVSKGLVA 760
SCA1_2|Sh_203E09_p000020           VWNYEDADPDFGSCQAKELVDHLES-VLA-NEPVSVKTTPHSVEV-KPQ---GVSKGLVA 661
SAC2_1|SUGdenovo0315072.p1         VWNYEDADPDFGSCQAKELVDHLES-VLA-NEPVSVKTTPHSVEV-KPQ---GVSKGLVA 760
SCA3|SP803280_c117830_g1_i1_m.154722 VWCYEDADPDFGSCQAKELHDHLES-VLS-NEPVSVKAGPNIVEV-KPQ---GVSKGLVA 762
OsTPS10_LOC_Os09g23350.1           VWSYEDADPDFGSCQAKELHDHLES-VLA-NEPVTVKAGLNHVEV-KPQ---GVSKGLVA 785
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ZmTPSII.2.1_GRMZM2G019183_T02                VWCVEDADPDFGSCQAKELHDHLES-VLA-NEPVSVKAGPNIVEV-KPQ---GVSKGLVA 775
AtTPS7_AT1G06410.1                           VWQYRDADPGFGSLQAKEMLEHLES-VLA-NEPVAVKSGHYIVEV-KPQ---GVSKGSVS 756
OsTPS3_LOC_Os01g53000.1                      VWHHQDADPGFGSSQAKEMLDHLES-VLA-NEPVCVKSGQQIVEV-KPQ---GVSKGFVA 778
OsTPS6_LOC_Os05g44100.1                      VWHHQDADQGFGSSQAKEMLDHLES-VLA-NEPVSVKSGQHIVEV-KPQ---GVTKGLIA 782
OsTPS2_LOC_Os01g54560.1                      VWHHQDADPGFGSSQAKELLDHLES-VLA-NEPVSVKSGQHIVEV-KPQ---GVSKGVVA 795
ZmTPSII.3.3_GRMZM2G118462_T01                VWHHQDADLGFGSSQAKEMLDHLES-VLA-NEPVSVKSGQHIVEV-KPQ---GISKGIVA 795
SCA2_1|c95057f1p13337.p1                     VWHHQDADPGFGSSQAKEMLDHLES-VLA-NEPVSVKSGQHIVEV-KPQ---GVSKGMVA 758
SCA4|evm.model.SCSP803280_000001563.1        VWHHQDADPGFGSSQAKEMLDHLES-VLA-NEPVSVKSGQHIVEV-KPQ---GVSKGMVA 793
ZmTPSII.3.1_GRMZM2G304274_T01                VWHHQDADPGFGSSQAKELLDHLES-VLA-NEPVSVKSGQHIVEV-KPQ---GVSKGIVA 795
ZmTPSII.3.2_GRMZM2G123277_T01                VWHHQDADPGFGSSQAKELLDHLES-VLA-NEPVSVKSGQHIVEV-KPQ---GVSKGIVA 795
AtTPS11_AT2G18700.1                          VWHHQEADHSFGSWQAKELLDHLES-VLT-NEPVVVKRGQHIVEV-KPQ---GVSKGKVV 754
OsTPS7_LOC_Os08g31980.1                      VWHYLDADHDFGSCQAKELLGHLER-VLS-NEPVVVKCGHYIVEV-KPQ---GVSKGLVV 760
ZmTPSII.4.3_GRMZM2G366659_T01                VWHYLDADHDFGSFQAKELKDHLER-VLS-NEPVVVKCGHYIVEV-KPQ---GVSKGRAV 760
SCA2_1|c94760f1p43082.p1                     VWHYLDADHDFGSFQAKELQDHLER-VLS-NEPVVVKCGHYIVEV-KPQ---GVSKGRAV 760
ZmTPSII.4.2_GRMZM2G008226_T01                VWHYLDADHDFGSFQAKELQGHLER-VLS-NEPVVVKCGHYIVEV-KPQ---GVSKGLAV 760
OsTPS11_LOC_Os09g20990.1                     VWHYQDADHDFGSCQAKELVSHLER-VLA-NEPVVVKRGHQIVEV-KPQ---GVSKGIAV 761
ZmTPSII.4.1_GRMZM2G527891_T01                VWHYQNTDHDFGSCQAKELVSHLER-VLS-NEPVVVRRGHQIVEV-KPQ---GVSKGISV 762
AtTPS10_AT1G60140.1                          VWHHQDADPDFGSCQAKELLDHLET-VLV-NEPVIVNRGHQIVEV-KPQ---GVSKGLVT 762
AtTPS8_AT1G70290.1                           VWHHQDADPDFGSCQAKEMLDHLES-VLA-NEPVVVKRGQHIVEV-KPQ---GVSKGLAA 757
AtTPS9_AT1G23870.1                           VWHHQDADPDFGACQAKELLDHLES-VLA-NEPVVVKRGQHIVEV-KPQ---GVSKGLAV 762
OsTPS9_LOC_Os09g25890.1                      VWRYEDADPRLAPLQAKELLDHLAT-VLA-SEPVAVRSGYKIVEV-IPQ---GVSKGVAA 765
OsTPS5_LOC_Os02g54820.1                      VWHHDEADPDFGSCQAKELLDHLEN-VLA-NEPVVVKRGQHIVEV-NPQ---GISKGVVV 748
ZmTPSII.5.3_GRMZM2G312521_T01                VWHHDEADPDFGSCQAKELLDHLEN-VLA-NEPVVVKRGQHIVEV-NPQ---GISKGVVV 880
ZmTPSII.5.4_GRMZM2G122231_T01                VWHHHEADPDFGSCQAKELLDHLEN-VLA-NEPVVVKRGQHIVEV-NPQ---GISKGVVV 749
OsTPS8_LOC_Os08g34580.1                      VWHYEEADPDFGSCQAKELQDHLQN-VLA-NEPVFVKSGHQIVEV-NPQ---GVGKGVAV 728
ZmTPSII.5.1_GRMZM2G007736_T02                VWHYEGTDPVFGPSQAKELRDHLSD-VLA-KEPVSVRSGYNIVEV-NPQ---EVDKGTAV 855
ZmTPSII.5.2_GRMZM2G079928_T01                VWHYEEADPVFGPRQAKELQYHLRD-VLS-EEPVYVKSGHQIVEV-NGNPQEVVGKGTAV 768
CAA48913.1                                   ------------------------------------------------------------ 474
XP_028127761.1                               TFHFRETPVQIRASLEKEAKI-----LIE-SAGFIADHVHQAIEARPPV---QWNKGRAS 692
ART29424.1                                   TFHFRETPVHLRTQLAEEARR-----LIE-EAGFKAGKAHQAIEAKPPV---QWNKGRAS 686
pdb|5HUU|B                                   ------------------------------------------------------------ 478
tr|Q01GJ2|Q01GJ2_OSTTA                       VWSYKYADPDFGRQQARDLLQHLWTGPIS-NAPVDVVMGAKSVEV-RPV---GLSKGTAV 833
AtTPS1_AT1G78580.1                           IWNYKYADIEFGRLQARDLLQHLWTGPIS-NASVDVVQGSRSVEV-RAV---GVTKGAAI 771
OsTPS1_LOC_Os05g44210.1                      VWNYKYADVEFGRLQARDMLQHLWTGPIS-NAAVDVVQGSRSVEV-RSV---GVTKGAAI 808
ZmTPSI.1.1_GRMZM2G068943_T02                 VWNYKYADVEFGRLQARDMLQHLWTGPIS-NAAVDVVQGSRSVEV-RSV---GVTKGAAI 823
SCA3|SP803280_c107577_g2_i1_m.97794          VWNYKYADVEFGRLQARDMLQHLWTGPIS-NAAVDVVQGSRSVEV-RSV---GVTKGAAI 808
SCA1_2|Sh_239M11_p000040                     VWNYKYADVEFGRLQARDMLQHLWTGPIS-NAAVDVVQGSRSVEV-RSV---GVTKGAAI 809
ZmTPSI.1.2_GRMZM2G001304_T01                 VWNYKYADVEFGRLQARDMLQHLWTGPIS-NAAVDVVQGSRSVEV-RSV---GVTKGAAI 409
AtTPS4_AT4G27550.1                           VWNYENADAEFGRAQARDMLQHLWAGPIS-NASVDVVRGGQSVEV-HAV---GVTKGSAM 689
AtTPS2_AT1G16980.1                           VWNYEYADVEFGRAQARDLLQYLWAGPIS-NASVDVVRGNHSVEV-HAI---GETKGAAI 684
AtTPS3_AT1G17000.1                           VWNYEYADVEFGRAQARDLLQYLWAGPIS-NASAEVVRGKNSVEV-HAI---GVTKEPEI 662
                                             H140  R142                    K176 N178 E180          K188

tr|Q00WH8|Q00WH8_OSTTA                       SYLRDALIPD-----------LAKKGFGSEEVFTVYVGD-DVTDEDAFMEINEKLGD--- 296
SCA5|SCEZRZ3019C12.g.p1                      EFLLESL---------------GLNE--SEDVLPIYVGD-DRTDEDAFKVLKA---S--- 399
SCA3|SP803280_c110556_g1_i2_m.112799         EFLLESL---------------GLNE--SEDVLPIYVGD-DRTDEDAFKVLKA---S--- 340
SCA1_2|Sh_210F11_p000130                     EFLLQSL---------------GLND--SEDVIPIYIGD-DRTDEDAFKVLRE---R--- 324
SCA3|SP803280_c104339_g1_i3_m.83754          EFLLQSL---------------GLND--SEDVIPIYIGD-DRTDEDAFKVLRE---R--- 324
SCA4|evm.model.SCSP803280_000048991.1        EFLLSAL---------------GFADAAKDDVFPIYVGD-DRTDEDAFRVLRA---R--- 317
SCA3|SP803280_c109234_g1_i4_m.105886         EFLLKSL---------------GYAG--RNDVFPIYIGD-DRTDEDAFKVLRN---M--- 312
SCA3|SP803280_c102057_g1_i4_m.74365          EFLLESL---------------GFAD--CTDVLPVYIGD-DRTDEDAFKVLRK---R--- 320
SAC2_1|SUGdenovo0588378.p1                   EFLLESL---------------GFAD--CTDVLPVYIGD-DRTDEDAFKVLRK---R--- 245
5DXF_1|Chains                                ------------------------------------------------------------ 534
XP_721536.1                                  KRLVLHPHGAKQEKHPTGHCTKDIP-IEELPDFMLCLGD-DLTDEDMFNSLNEINKKWKG 784
tr|A0A090N4I6|A0A090N4I6_OSTTA                DELLNVDE-A----------------ASNVADFVLAVGD-DKSDEDMFSAVATHT----- 795
AtTPS5_AT4G17770.1                           ERLLTTMQ-E-----------KG-----KLLDFILCVGD-DRSDEDMFEVIMSAK----- 799
AtTPS6_AT1G68020.2                           RRMLSMMQ-E-----------RG-----TLPEFVLCIGD-DRSDEDMFEVICSST----- 810
OsTPS4_LOC_Os03g12360.1                      RRLLASMQ-E-----------RG-----MCTDFVLCIGD-DRSDEEMFQMITSST----- 801
ZmTPSII.2.2_GRMZM2G099860_T01                RRMLVSMK-E-----------RG-----QCPDFVLCIGD-DKSDEDMFQLIATAA----- 797
SCA1_2|Sh_203E09_p000020                     RRMLVSMK-E-----------RG-----QCPDFVLCIGD-DKSDEDMFQLIASAA----- 698
SAC2_1|SUGdenovo0315072.p1                   RRMLVSMK-E-----------RG-----QCPDFVLCIGD-DKSDEDMFQLIASAA----- 797
SCA3|SP803280_c117830_g1_i1_m.154722         KRILSTMQ-E-----------RG-----DLPDFVLCVGD-DRSDEDMFEVITTAA----- 799
OsTPS10_LOC_Os09g23350.1                     KRLLSIIR-E----------------NSLLPDFVLCIGD-DRSDEDMFEVITTAA----- 822
ZmTPSII.2.1_GRMZM2G019183_T02                KRILSTTQ-E-----------RGDA-DDDLPDFVLCVGD-DRSDEDMFEVIAAAA----- 816
AtTPS7_AT1G06410.1                           EKIFSSMA-G-----------KG-----KPVDFVLCIGD-DRSDEDMFEAIGNAM----- 793
OsTPS3_LOC_Os01g53000.1                      EKILSTLT-E-----------NK-----RQADFVLCIGD-DRSDEDMFEGIADIM----- 815
OsTPS6_LOC_Os05g44100.1                      EKVLTSMK-E-----------KG-----QLADFVLCIGD-DRSDEDMFENIADVM----- 819
OsTPS2_LOC_Os01g54560.1                      EKILVSMK-E-----------RG-----KQADFVLCIGD-DRSDEDMFENIADTI----- 832
ZmTPSII.3.3_GRMZM2G118462_T01                ERILASVK-E-----------RG-----KQADFLLCIGD-DRSDEDMFENIADII----- 832
SCA2_1|c95057f1p13337.p1                     ERILASVK-E-----------RG-----KQADFVLGIGD-DRSDEDMFENIADII----- 795
SCA4|evm.model.SCSP803280_000001563.1        ERILASVK-E-----------RG-----KQADFVLGIGD-DRSDEDMFENIADII----- 830
ZmTPSII.3.1_GRMZM2G304274_T01                ERILASVK-E-----------RG-----KQADFVLCIGD-DRSDEDMFENIADII----- 832
ZmTPSII.3.2_GRMZM2G123277_T01                ERILASVK-E-----------RG-----KQADFVLCIGD-DRSDEDMFENIADII----- 832
AtTPS11_AT2G18700.1                          EHLIATMRNT-----------KG-----KRPDFLLCIGD-DRSDEDMFDSIVKHQ----- 792
OsTPS7_LOC_Os08g31980.1                      DKVIHRLM-N-----------NG-----KTPDFVVCIGN-DRSDEDMFKSIDSMT----- 797
ZmTPSII.4.3_GRMZM2G366659_T01                DKLIQALANN-----------NG-----KAQDFLMCVGN-DRSDEDMFECINGMA----- 798
SCA2_1|c94760f1p43082.p1                     NKLIHTLVN------------NR-----KAPDFLMCVGN-DRSDEDMFECINGMT----- 797
ZmTPSII.4.2_GRMZM2G008226_T01                NKLIHTLVK------------NG-----KAPDFLMCVGN-DRSDEDMFESINGMT----- 797
OsTPS11_LOC_Os09g20990.1                     DTVIRTVI-N-----------NE-----NAPDFLMCIGN-DRSDEDMFESINEAV----- 798
ZmTPSII.4.1_GRMZM2G527891_T01                DKIIRTLV-S-----------KG-----EVPDLLMCIGN-DRSDEDMFESINRAT----- 799
AtTPS10_AT1G60140.1                          GKILSRML-E-----------DG-----IAPDFVVCIGD-DRSDEEMFENISTTL----- 799
AtTPS8_AT1G70290.1                           EKVIREMV-E-----------RG-----EPPEMVMCIGD-DRSDEDMFESILSTV----- 794
AtTPS9_AT1G23870.1                           EKVIHQMV-E-----------DG-----NPPDMVMCIGD-DRSDEDMFESILSTV----- 799
OsTPS9_LOC_Os09g25890.1                      ECIVSAMAAR-----------RG-----GALGFVLCVGD-DRSDEDMFGALASLCG---- 804
OsTPS5_LOC_Os02g54820.1                      DNLLSSMV-S-----------RG-----KAPDFVLCIGD-DRSDEDMFESIVCPS----- 785
ZmTPSII.5.3_GRMZM2G312521_T01                DSLLSSMV-R-----------TG-----KPPDFVLCIGD-DRSDEDMFESIVCPA----- 917
ZmTPSII.5.4_GRMZM2G122231_T01                DSLLSSMV-R-----------TG-----KPPDFVLCIGD-DRSDEDMFESIVCPA----- 786
OsTPS8_LOC_Os08g34580.1                      RNLISTMG-N-----------RG-----SLPDFILCVGD-DRSDEDMFEAMISPS----- 765
ZmTPSII.5.1_GRMZM2G007736_T02                QRIIAAMR-D-----------RG-----RMPDFILCVGD-DASDEDMFKAVTAPS----- 892
ZmTPSII.5.2_GRMZM2G079928_T01                QGLIAALG-A-----------RG-----RMPDFILCVGD-DVSDEDMFEAISAPS----- 805
CAA48913.1                                   ------------------------------------------------------------ 474
XP_028127761.1                               IYILRTAF-G-----------VDWS-ERIRIIYV---GD-DQTDEDAMQALKGMAATFRV 735
ART29424.1                                   IYILRTAF-G-----------VDWS-ERIRIIYA---GD-DSTDEDAMQALKGMAATFRV 729
pdb|5HUU|B                                   ------------------------------------------------------------ 478
tr|Q01GJ2|Q01GJ2_OSTTA                       ERILHIIN-G-----------GKNK-ELIEVDFVACFGHFLGKDEDIFSFLEQ-N----S 875
AtTPS1_AT1G78580.1                           DRILGEIV-H-----------SKS--MTTPIDYVLCIGHFLGKDEDVYTFFE-------P 810
OsTPS1_LOC_Os05g44210.1                      DRILGEIV-H-----------SKS--MITPIDYVLCIGHFLGKVIMQLIYMCI-S----V 849
ZmTPSI.1.1_GRMZM2G068943_T02                 DRILGEIV-H-----------SEN--MITPIDYVLCIGHFLGKDEDIYVFF---D----P 862
SCA3|SP803280_c107577_g2_i1_m.97794          DRILGEIV-H-----------SEN--MVTPIDYVLCIGHFLGKDEDIYVFF---D----P 847
SCA1_2|Sh_239M11_p000040                     DRILGEIV-H-----------SEN--MVTPIDYVLCIGHFLGKDEDIYVFF---D----P 848
ZmTPSI.1.2_GRMZM2G001304_T01                 DRILGEIV-H-----------SEN--MITPIDYVLCIGHFLGKDEDIYVFF---D----P 448
AtTPS4_AT4G27550.1                           ERILGEIV-H-----------NKS--MATPIDYVLCIGCFLGKDEDVYTFFEP-E----L 730
AtTPS2_AT1G16980.1                           GRILGEIV-H-----------RKS--MTTPIDFVFCSGYFLEKDEDIYTFFES-K----I 725
AtTPS3_AT1G17000.1                           GHILGEIV-H-----------KKA--MTTPIDYVFCSGYFLEKDEDIYTFFES-E----I 703
                                                                    D230 D234
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tr|Q00WH8|Q00WH8_OSTTA                    ---------------------------------------------H--LG---------- 299
SCA5|SCEZRZ3019C12.g.p1                   ---------------------------------------------N--RG---------- 402
SCA3|SP803280_c110556_g1_i2_m.112799      ---------------------------------------------N--RG---------- 343
SCA1_2|Sh_210F11_p000130                  ---------------------------------------------K--CG---------- 327
SCA3|SP803280_c104339_g1_i3_m.83754       ---------------------------------------------K--CG---------- 327
SCA4|evm.model.SCSP803280_000048991.1     ---------------------------------------------G--QG---------- 320
SCA3|SP803280_c109234_g1_i4_m.105886      ---------------------------------------------G--QG---------- 315
SCA3|SP803280_c102057_g1_i4_m.74365       ---------------------------------------------G--QG---------- 323
SAC2_1|SUGdenovo0588378.p1                ---------------------------------------------G--QG---------- 248
5DXF_1|Chains                             ------------------------------------------------------------ 534
XP_721536.1                               DN-------------------------------RPTNKF-G-------------------- 793
tr|A0A090N4I6|A0A090N4I6_OSTTA            ------------------------------------------------A----------- 796
AtTPS5_AT4G17770.1                        ------------------------------------------------DG---------- 801
AtTPS6_AT1G68020.2                        ------------------------------------------------EG---------- 812
OsTPS4_LOC_Os03g12360.1                   ------------------------------------------------CG---------- 803
ZmTPSII.2.2_GRMZM2G099860_T01             ------------------------------------------------CG---------- 799
SCA1_2|Sh_203E09_p000020                  ------------------------------------------------CG---------- 700
SAC2_1|SUGdenovo0315072.p1                ------------------------------------------------CG---------- 799
SCA3|SP803280_c117830_g1_i1_m.154722      ------------------------------------------------RG---------- 801
OsTPS10_LOC_Os09g23350.1                  ------------------------------------------------QD---------- 824
ZmTPSII.2.1_GRMZM2G019183_T02             ------------------------------------------------AA---------- 818
AtTPS7_AT1G06410.1                        ------------------------------------------------SK---------- 795
OsTPS3_LOC_Os01g53000.1                   ------------------------------------------------RR---------- 817
OsTPS6_LOC_Os05g44100.1                   ------------------------------------------------KR---------- 821
OsTPS2_LOC_Os01g54560.1                   ------------------------------------------------KK---------- 834
ZmTPSII.3.3_GRMZM2G118462_T01             ------------------------------------------------GR---------- 834
SCA2_1|c95057f1p13337.p1                  ------------------------------------------------ER---------- 797
SCA4|evm.model.SCSP803280_000001563.1     ------------------------------------------------ER---------- 832
ZmTPSII.3.1_GRMZM2G304274_T01             ------------------------------------------------KR---------- 834
ZmTPSII.3.2_GRMZM2G123277_T01             ------------------------------------------------KR---------- 834
AtTPS11_AT2G18700.1                       ------------------------------------------------D----------- 793
OsTPS7_LOC_Os08g31980.1                   ------------------------------------------------SS---------- 799
ZmTPSII.4.3_GRMZM2G366659_T01             ------------------------------------------------SN---------- 800
SCA2_1|c94760f1p43082.p1                  ------------------------------------------------SN---------- 799
ZmTPSII.4.2_GRMZM2G008226_T01             ------------------------------------------------SN---------- 799
OsTPS11_LOC_Os09g20990.1                  ------------------------------------------------SR---------- 800
ZmTPSII.4.1_GRMZM2G527891_T01             ------------------------------------------------SL---------- 801
AtTPS10_AT1G60140.1                       ------------------------------------------------SA---------- 801
AtTPS8_AT1G70290.1                        ------------------------------------------------TN---------- 796
AtTPS9_AT1G23870.1                        ------------------------------------------------TN---------- 801
OsTPS9_LOC_Os09g25890.1                   --GGKN---------------------------------------GGASSST---------- 815
OsTPS5_LOC_Os02g54820.1                   ------------------------------------------------NS---------- 787
ZmTPSII.5.3_GRMZM2G312521_T01             ------------------------------------------------SS---------- 919
ZmTPSII.5.4_GRMZM2G122231_T01             ------------------------------------------------SN---------- 788
OsTPS8_LOC_Os08g34580.1                   ------------------------------------------------------------ 765
ZmTPSII.5.1_GRMZM2G007736_T02             ------------------------------------------------NK---------- 894
ZmTPSII.5.2_GRMZM2G079928_T01             ------------------------------------------------SK---------- 807
CAA48913.1                                ------------------------------------------------------------ 474
XP_028127761.1                            TSSQITKTSAERRLPSTDAVLTMLKWVERHLGRRKPSLDGGYVRRNSAQI---------- 785
ART29424.1                                TSSSIVKTAAERRLPSTDSVLTMLKWVERHLSRRKPSIDPNNYRRNSLAR---------- 779
pdb|5HUU|B                                ------------------------------------------------------------ 478
tr|Q01GJ2|Q01GJ2_OSTTA                    SQNSLS-TNAH----------------------------------SPGSKKGNTS----- 895
AtTPS1_AT1G78580.1                        ELPSDM-PAIARSRPSSDSGA-----KSSSGDRRPPSKS-THNNNKSGSKSSSSSNSNNN 863
OsTPS1_LOC_Os05g44210.1                   SFSARC-F----FCL------------------------------------------- 859
ZmTPSI.1.1_GRMZM2G068943_T02              EYPSES-K----VKPEGGSAS-----LDRRPNGRPPSNG-RSNSRNPQSR-----TQ--- 903
SCA3|SP803280_c107577_g2_i1_m.97794       EYPSES-K----IKPEGGSAS-----LDRRPNGRPPSNG-RSSSRNPQSR-----TQ--- 888
SCA1_2|Sh_239M11_p000040                  EYPSES-K----IKPEGGSAS-----LDRRPNGRPPSNG-RSSSRNPQSR-----TQ--- 889
ZmTPSI.1.2_GRMZM2G001304_T01              EYPSES-K----VKPEGGSAS-----LDRRPNGRPASNG-RSNSRNPQSR-----PQ--- 489
AtTPS4_AT4G27550.1                        TKKAKS-L-------------------------------------------------- 737
AtTPS2_AT1G16980.1                        LSSKS----------------------------------------------------- 730
AtTPS3_AT1G17000.1                        LSPKLS-HE------------------------------------TRS------------ 714

tr|Q00WH8|Q00WH8_OSTTA                    ------------------------------------------VGVLVSHAPKVSAAKFS 316
SCA5|SCEZRZ3019C12.g.p1                   ------------------------------------------FGILVSSIPKESDAFYS 419
SCA3|SP803280_c110556_g1_i2_m.112799      ------------------------------------------FGILVSSIPKESDAFYS 360
SCA1_2|Sh_210F11_p000130                  ------------------------------------------YGILVSQVPKDTEAFYS 344
SCA3|SP803280_c104339_g1_i3_m.83754       ------------------------------------------YGILVSQVPKDTEAFYS 344
SCA4|evm.model.SCSP803280_000048991.1     ------------------------------------------AGILVSKFPKETSASFT 337
SCA3|SP803280_c109234_g1_i4_m.105886      ------------------------------------------IGILVSKLPKETVASYS 332
SCA3|SP803280_c102057_g1_i4_m.74365       ------------------------------------------VGILVSKHPKDTSASYS 340
SAC2_1|SUGdenovo0588378.p1                ------------------------------------------VGILVSKHPKDTSASYS 265
5DXF_1|Chains                             ------------------------------------------------------------ 534
XP_721536.1                               ---------------------------------------SYGVYPVAVGPASKKTVAIAH 814
tr|A0A090N4I6|A0A090N4I6_OSTTA            ----------------------------------LPLYAGSSVYTSTIGQK--PSKAPAY 820
AtTPS5_AT4G17770.1                        ----------------------------------PALSPVAEIFACTVGQK--PSKAKYY 825
AtTPS6_AT1G68020.2                        ----------------------------------PSIAPRAEIFACTVGQK--PSKAKYY 836
OsTPS4_LOC_Os03g12360.1                   ----------------------------------ESLAATAEVFACTVGRK--PSKAKYY 827
ZmTPSII.2.2_GRMZM2G099860_T01             ----------------------------------DSLASKAEVFACTVGRK--PSKAKYY 823
SCA1_2|Sh_203E09_p000020                  ----------------------------------DSLGSKADVFACTVGRK--PSKARYY 724
SAC2_1|SUGdenovo0315072.p1                ----------------------------------DSLGSKADVFACTVGRK--PSKARYY 823
SCA3|SP803280_c117830_g1_i1_m.154722      ----------------------------------VSLQPEAEVFACTVGRK--PSKAKYY 825
OsTPS10_LOC_Os09g23350.1                  ----------------------------------NCLSPDAEVFACTVGRK--PSKAKYY 848
ZmTPSII.2.1_GRMZM2G019183_T02             -------------------------------RGVSSLQAEAEVFACTVGRK--PSKAKYY 845
AtTPS7_AT1G06410.1                        ----------------------------------RLLCDNALVFACTVGQK--PSKAKYY 819
OsTPS3_LOC_Os01g53000.1                   ----------------------------------SIVDPQTSLYACTVGQK--PSKAKYY 841
OsTPS6_LOC_Os05g44100.1                   ----------------------------------SIVAPKTPLFACTVGQK--PSKARFY 845
OsTPS2_LOC_Os01g54560.1                   ----------------------------------GMVATNTSLFACTVGQK--PSKAKFY 858
ZmTPSII.3.3_GRMZM2G118462_T01             ----------------------------------NLVAPRTALFACTVGQK--PSKAKFY 858
SCA2_1|c95057f1p13337.p1                  ----------------------------------NVVDPRTSLFACTVGQK--PSKAKFY 821
SCA4|evm.model.SCSP803280_000001563.1     ----------------------------------NVVDPRTSLFACTVGQK--PSKAKFY 856
ZmTPSII.3.1_GRMZM2G304274_T01             ----------------------------------NMVAPRTSLFACTVGQK--PSKAKFY 858
ZmTPSII.3.2_GRMZM2G123277_T01             ----------------------------------NMVAPRTSLFACTVGQK--PSKAKFY 858
AtTPS11_AT2G18700.1                       ----------------------------------VSSIGLEEVFACTVGQK--PSKAKYY 817
OsTPS7_LOC_Os08g31980.1                   -------------------------------S---AFPAVPEVFACSVGQK--PSKAKYY 823
ZmTPSII.4.3_GRMZM2G366659_T01             -------------------------------D--VSSTTVPEVFACSVGQK--PSKAKYY 825
SCA2_1|c94760f1p43082.p1                  -------------------------------D--VLSPTVPEVFACSVGQK--PSKAKYY 824
ZmTPSII.4.2_GRMZM2G008226_T01             -------------------------------A--VLSPTMPELFACSVGQK--PSKAKYY 824
OsTPS11_LOC_Os09g20990.1                  -------------------------------S---VFPTAPDVFACSVGQK--ASKAKYY 824
ZmTPSII.4.1_GRMZM2G527891_T01             -------------------------------S---ELPAAPEVFACSVGPK--ASKANYY 825
AtTPS10_AT1G60140.1                       -------------------------------Q---SSSMSTEIFACTVGRK--PSKAKYF 825
AtTPS8_AT1G70290.1                        -------------------------------P---ELLVQPEVFACTVGRK--PSKAKYF 820
AtTPS9_AT1G23870.1                        -------------------------------P---DLPMPPEIFACTVGRK--PSKAKYF 825
OsTPS9_LOC_Os09g25890.1                   -------------------------------TTTTALLAAAQVFACTVGNK--PSMASYY 842
OsTPS5_LOC_Os02g54820.1                   ----------------------------------SVKLPASSEVFACTVGKK--PSMAKYY 812
ZmTPSII.5.3_GRMZM2G312521_T01             ----------------------------------SGGVRLPASSEVFACTVGKK--PSMAKYY 946
ZmTPSII.5.4_GRMZM2G122231_T01             ----------------------------------SGVKLPASSEVFACTVGKK--PSMARYY 814
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OsTPS8_LOC_Os08g34580.1                    ---------------------------------PAFPETAQIFPCTVGNK--PSLAKYY 789
ZmTPSII.5.1_GRMZM2G007736_T02              ---------------------------------SAFPEDAEVFACTIGTK--PSLAKYY 918
ZmTPSII.5.2_GRMZM2G079928_T01              ---------------------------------FAFPEAAEIFACTVGNK--PSLAKYY 831
CAA48913.1                                 ------------------------------------------------------------ 474
XP_028127761.1                             ----QHTIQMELPLGQ-----------------------------QSNNS--TKDH--- 806
ART29424.1                                 ----QGAVQMEMQFMQ-----------------------------SVQKN--GNSARLS 803
pdb|5HUU|B                                 ------------------------------------------------------------ 478
tr|Q01GJ2|Q01GJ2_OSTTA                     ---LSASIQNDLAAVEEHDESN-------LKKKHEAEIRFQDIVTCTVGRK--RSSARYF 943
AtTPS1_AT1G78580.1                         NKSSQRSLQSERKSGSNHSLGNSRRPSPEKISWNVLDLKGENYFSCAVGRT--RTNARYL 921
OsTPS1_LOC_Os05g44210.1                    ------------------------------------------------------------ 859
ZmTPSI.1.1_GRMZM2G068943_T02               ---KAQQAASERSSSSSHSSTSSN--HDWREGSSVLDLKGENYFSCAVGRK--RSNARYL 956
SCA3|SP803280_c107577_g2_i1_m.97794        ---KAQQAASERSSSSSHSSASSN--HDWREGSSVLDLKGENYFSCAVGRK--RSNARYL 941
SCA1_2|Sh_239M11_p000040                   ---KAQQAASERSSSSSHSSASSN--HDWREGSSVLDLKGENYFSCAVGRK--RSNARYL 942
ZmTPSI.1.2_GRMZM2G001304_T01               ---KAQQAASERSSSSSHSSTSSN--HDWREGSSVLDLKAENYFSCAVGRK--RSNARYL 542
AtTPS4_AT4G27550.1                         --------------------SSSGSDSPKKVSSTIVDLKGENYFSVAIGQT--HTKARYF 775
AtTPS2_AT1G16980.1                         ---------------------------------PNGLDLKKENYFSAAIGQA--RTKARYV 756
AtTPS3_AT1G17000.1                         ------------------KSSSSNHSLEKKVSLNVLDLKQENYFSTAIGQA--RTKARYV 754


tr|Q00WH8|Q00WH8_OSTTA                     LRNTPEVLQFLT---TLSKLADAGEVKTLPR----------------------------- 344
SCA5|SCEZRZ3019C12.g.p1                    LRDPAEYIWKYS-------------------------------------------------- 431
SCA3|SP803280_c110556_g1_i2_m.112799       LRDPAEVMEFLR---MLAAWKEQS--T-------------------------------- 382
SCA1_2|Sh_210F11_p000130                   LRDPSEVMGFLN---SLVRWKKHS--L-------------------------------- 366
SCA3|SP803280_c104339_g1_i3_m.83754        LRDPSEVMGFLN---SLVRWKKHS--L-------------------------------- 366
SCA4|evm.model.SCSP803280_000048991.1      LRDPAEVKEFLR---KLVVVNANT--TS------------------------------- 360
SCA3|SP803280_c109234_g1_i4_m.105886       LSDPAEVKEFLR---KLAKSKGDA--PTMKMMT---------------------------- 360
SCA3|SP803280_c102057_g1_i4_m.74365        LQAPAEVMEFLL---RLVERERLS--KARPRW----------------------------- 367
SAC2_1|SUGdenovo0588378.p1                 LQAPAEVMEFLL---RLVEWERLS--KARPRW----------------------------- 292
5DXF_1|Chains                              ------------------------------------------------------------ 534
XP_721536.1                                LNEPRQVLETLGLLAGLVSIFESAGTVDLDDRGHLANSVSSERSKHAVSKAVSLRKKASQ 874
tr|A0A090N4I6|A0A090N4I6_OSTTA             LDDTDDVVNLLQ---TLAQYNVCHRH---------------------------------- 843
AtTPS5_AT4G17770.1                         LDDTAEIIRMLD---GLAATNTTISDQTDSTA--------TV-----P-----T------ 858
AtTPS6_AT1G68020.2                         LDDTTEIVRLMH---GLASVTDQITPV--------------------------------- 860
OsTPS4_LOC_Os03g12360.1                    LDDTAEVVRLMQ---GLASVSNELARAASPPE--------DDDE---------------- 860
ZmTPSII.2.2_GRMZM2G099860_T01              LDDAAEVVRLMQ---GLSYVSEELALANQRDE--------DEDSS--------L------ 858
SCA1_2|Sh_203E09_p000020                   LDDAAEVVRLMQ---GLSYVSEELALANHRDE--------DEESS--------L------ 759
SAC2_1|SUGdenovo0315072.p1                 LDDAAEVVRLMQ---GLSYVSEELALANHRDE--------DEASS--------L------ 858
SCA3|SP803280_c117830_g1_i1_m.154722       LDDPADIVRLVE---GLANVSDDDQTHAPQLP--------TAAATDTV-----L------ 863
OsTPS10_LOC_Os09g23350.1                   LDDLADIVRLIQ---GLANVSDEMHSTMPTPV--------DA--ADTA-----L------ 884
ZmTPSII.2.1_GRMZM2G019183_T02              LDDPADIVRLVQ---GLASVSDDDQTHAPPPP--------PPSAATTA-----A------ 883
AtTPS7_AT1G06410.1                         LDDTTEVTCMLE---SLAEASEASNFSMRE----------LDEAL---------------- 851
OsTPS3_LOC_Os01g53000.1                    LDDTNDVLNMLE---ALADASEETDSQEDAEE--------ITSIPD-----PE------- 878
OsTPS6_LOC_Os05g44100.1                    LDDTFEVVTMLS---SLADASEPDLMADLEDD--------LAT---SVS-SIEISDRVVS 890
OsTPS2_LOC_Os01g54560.1                    LDDTFEVVTMLS---ALADATEPEPETDLTDE--------FDELAVSVS-SVDIDDEQTP 906
ZmTPSII.3.3_GRMZM2G118462_T01              LDDTFEVVTMLS---ALADATGPELETDSAD-----------ESVAYIS-SLDIGDEQSE 903
SCA2_1|c95057f1p13337.p1                   LDDTFEVVTMLS---ALADATGPELETDSAD-----------ELAASIS-SLDIGDEQSE 866
SCA4|evm.model.SCSP803280_000001563.1      LDDTFEVVTMLS---TLADATGPELETDSAD-----------ELAASIS-SLDIGDEQSE 901
ZmTPSII.3.1_GRMZM2G304274_T01              LDDTFEVVAMLS---ALADATGAELKSDSAD-----------ELAASIS-SLDIGDEQSE 903
ZmTPSII.3.2_GRMZM2G123277_T01              LDDTFEVVAMLS---ALADATGAELESDSAD-----------ELAASIS-SLDIGDEQSE 903
AtTPS11_AT2G18700.1                        LDDTPSVIKMLE---WLASASDGSKHEQ-QKKQS---KFTFQQPMGQCR-KKA------- 862
OsTPS7_LOC_Os08g31980.1                    VDDAGEVVRLLK---NVAGISSHR----EAVSHG---RVTFRDVMDYVE----------- 862
ZmTPSII.4.3_GRMZM2G366659_T01              VDDTSEVIRLLR---DATRFSSSQRREDVNASRG---RVTFRDALDYVD----------- 868
SCA2_1|c94760f1p43082.p1                   VDDTSEVIRLLR---NVTRISS--QREDVNASHV---RVTFRDVLDYVD----------- 865
ZmTPSII.4.2_GRMZM2G008226_T01              VDDTSEVIRLLK---NVTRIPS--QRQDVSASHG---RVTFRGVLDYVD----------- 865
OsTPS11_LOC_Os09g20990.1                   VDGCSEVIRLLK---GVTAITPRR----EVISQS---QVTFRDILEVVS----------- 863
ZmTPSII.4.1_GRMZM2G527891_T01              VDGCDEVIRLLK---GVTAVSLQK----DTAGHS---HAAFEDTLEVVS----------- 864
AtTPS10_AT1G60140.1                        LDEVSDVVKLLQ---GLANTSSPKPR---YPSHL---RVSFESVV---------------- 861
AtTPS8_AT1G70290.1                         LDDEADVLKLLR---GLGDSSSSLKP---SSSHT---QVAFESIV---------------- 856
AtTPS9_AT1G23870.1                         LDD----------------------------------------------------------- 828
OsTPS9_LOC_Os09g25890.1                    LNDKEEVVDMLH---GLAFSSPSSRLRAAAAPRR---PADFD--IKSLL-RCE------- 886
OsTPS5_LOC_Os02g54820.1                    LDDTVDVIKMLQ---GLANAPSQRPRPIWMPKRR---IAPVSQTLVLLI-RLRLHSLLLP 865
ZmTPSII.5.3_GRMZM2G312521_T01              LDDTVDVVKMLD---GLASAPSPPRRPGPAAAVQ--------------L-RVSFEGSL-- 986
ZmTPSII.5.4_GRMZM2G122231_T01              LDDTVDVVKMLD---GLASAPSQQRS---RPAVQ--------------L-RVSFEGSL-- 851
OsTPS8_LOC_Os08g34580.1                    LDDPADVVKMLQ---GLTDSPTQQQPRP----------------------PVSFENSLDD 824
ZmTPSII.5.1_GRMZM2G007736_T02              LDDPVEVLSMLK---GLIKSSVEERPGDGEGPS-----------------RVSFD----- 953
ZmTPSII.5.2_GRMZM2G079928_T01              LEDPDEVLKMLK---GLIDSFEENHSTVEANK----------------------------- 860
CAA48913.1                                 ------------------------------------------------------------ 474
XP_028127761.1                             ------------------------------------------------------------ 806
ART29424.1                                 TDSTEQ-------------------------------------------------------- 809
pdb|5HUU|B                                 ------------------------------------------------------------ 478
tr|Q01GJ2|Q01GJ2_OSTTA                     VNDSDEVALCLA---ALTNSLNDGKGVI--ELLQ------FEDSISNVS-KSASRGNLST 991
AtTPS1_AT1G78580.1                         LGSPDDVVCFLE---KLADTTSSP------------------------------------ 942
OsTPS1_LOC_Os05g44210.1                    ------------------------------------------------------------ 859
ZmTPSI.1.1_GRMZM2G068943_T02               LSSSEEVVSFLK---ELATATAGFQATCADYMHV--------LG---------------- 989
SCA3|SP803280_c107577_g2_i1_m.97794        LSSSEEVVSFLK---ELASATAGFQSSCADYMFM--------DRQ--------------- 975
SCA1_2|Sh_239M11_p000040                   LSSSEEVVSFLK---ELASATAGFQSSCADYMFM--------DRQ--------------- 976
ZmTPSI.1.2_GRMZM2G001304_T01               LSSSEEVVSFLK---ELATETAGFQSSCADYMFL--------DRQ--------------- 576
AtTPS4_AT4G27550.1                         LDSSDDVVKLIG---KLCTHNNA-------------------------------------- 795
AtTPS2_AT1G16980.1                         IDSAHGVVDLLH---KLAVVADTTMTDSFSDSEI------YEPRDANAN-ENSKR-WINS 805
AtTPS3_AT1G17000.1                         VDSSHNVVNLLH---KLAVANTTTTSVKKPNV----------------------------- 783


tr|Q00WH8|Q00WH8_OSTTA                     ---------------------------  344
SCA5|SCEZRZ3019C12.g.p1                    ---------------------------  431
SCA3|SP803280_c110556_g1_i2_m.112799       ---------------------------  382
SCA1_2|Sh_210F11_p000130                   ---------------------------  366
SCA3|SP803280_c104339_g1_i3_m.83754        ---------------------------  366
SCA4|evm.model.SCSP803280_000048991.1      ---------------------------  360
SCA3|SP803280_c109234_g1_i4_m.105886       ---------------------------  360
SCA3|SP803280_c102057_g1_i4_m.74365        ---------------------------  367
SAC2_1|SUGdenovo0588378.p1                 ---------------------------  292
5DXF_1|Chains                              ---------------------------  534
XP_721536.1                                EK----EIVKEDPTNGAK---------  888
tr|A0A090N4I6|A0A090N4I6_OSTTA             ---------------------------  843
AtTPS5_AT4G17770.1                         -K--DLF--------------------  862
AtTPS6_AT1G68020.2                         ---------------------------  860
OsTPS4_LOC_Os03g12360.1                    ---------------------------  860
ZmTPSII.2.2_GRMZM2G099860_T01              -D--DVWE-------------------  863
SCA1_2|Sh_203E09_p000020                   -D---VWE-------------------  763
SAC2_1|SUGdenovo0315072.p1                 -D---VRE-------------------  862
SCA3|SP803280_c117830_g1_i1_m.154722       -R-------------------------  864
OsTPS10_LOC_Os09g23350.1                   -R-------------------------  885
ZmTPSII.2.1_GRMZM2G019183_T02              -D--TVPR-------------------  888
AtTPS7_AT1G06410.1                         ---------------------------  851
OsTPS3_LOC_Os01g53000.1                    ---------------------------  878
OsTPS6_LOC_Os05g44100.1                    FS--NLRT---EGS-------------  899
OsTPS2_LOC_Os01g54560.1                    -S--DKLI---GG--------------  913
ZmTPSII.3.3_GRMZM2G118462_T01              SS--DKPV---EGS-------------  912
SCA2_1|c95057f1p13337.p1                   SS--DRPI---GGS-------------  875
SCA4|evm.model.SCSP803280_000001563.1      SS--DRPI---GGS-------------  910
ZmTPSII.3.1_GRMZM2G304274_T01              SS--DTPI---GG--------------  911
ZmTPSII.3.2_GRMZM2G123277_T01              TS--DTPI---GGS-------------  912
AtTPS11_AT2G18700.1                        ---------------------------  862
OsTPS7_LOC_Os08g31980.1                    ---------------------------  862
ZmTPSII.4.3_GRMZM2G366659_T01              ---------------------------  868
SCA2_1|c94760f1p43082.p1                   ---------------------------  865
ZmTPSII.4.2_GRMZM2G008226_T01              ---------------------------  865
OsTPS11_LOC_Os09g20990.1                   ---------------------------  863
ZmTPSII.4.1_GRMZM2G527891_T01              ---------------------------  864
AtTPS10_AT1G60140.1                        ---------------------------  861
AtTPS8_AT1G70290.1                         ---------------------------  856
AtTPS9_AT1G23870.1                         ---------------------------  828
OsTPS9_LOC_Os09g25890.1                    ---------------------------  886
OsTPS5_LOC_Os02g54820.1                    APDADRRIAADIGSSSSTFLS------  886
ZmTPSII.5.3_GRMZM2G312521_T01              ---------------------------  986
ZmTPSII.5.4_GRMZM2G122231_T01              ---------------------------  851
OsTPS8_LOC_Os08g34580.1                    ---------------------------  824
ZmTPSII.5.1_GRMZM2G007736_T02              ---------------------------  953
ZmTPSII.5.2_GRMZM2G079928_T01              ---------------------------  860
CAA48913.1                                 ---------------------------  474
XP_028127761.1                             ---------------------------  806
ART29424.1                                 ---------------------------  809
pdb|5HUU|B                                 ---------------------------  478
tr|Q01GJ2|Q01GJ2_OSTTA                     GR----AASLPGGDNDAVYRSSSGQSI 1014
AtTPS1_AT1G78580.1                         ---------------------------  942
OsTPS1_LOC_Os05g44210.1                    ---------------------------  859
ZmTPSI.1.1_GRMZM2G068943_T02               ---------------------------  989
SCA3|SP803280_c107577_g2_i1_m.97794        ---------------------------  975
SCA1_2|Sh_239M11_p000040                   ---------------------------  976
ZmTPSI.1.2_GRMZM2G001304_T01               ---------------------------  576
AtTPS4_AT4G27550.1                         ---------------------------  795
AtTPS2_AT1G16980.1                         VR----RRKVEIGDTGQIGM-------  821
AtTPS3_AT1G17000.1                         ---------------------------  783
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