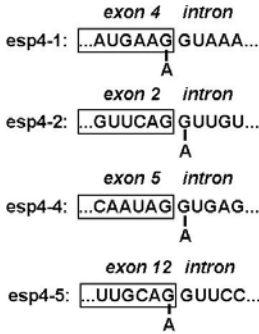


**C****D**

**ESP4 (At5g01400)**

(1) 1-----MASYSRARLKLDSLANSKASATELPPKLRQLRVMRRDQKDDSVFPTELLPHDPIILSDSQDFAGRKFPATLGEGLKYVLELPELPL  
 Os7g49320 (1) -----MAVAAAQDLPTTFHNPNSPLPSSMEPRQLRRLRVLLDFVARALHLADQASPRKLAENGEGRKHMAYLPNVPC  
 Os1g49940 (1) -----MEFEDAGARWPERGDAAGAPFERGADSPRFDSRRLAERLREKSNVLELDLVLPN  
 At1g27595 (1) -----MAAPAAATARAQALSLLAAANHHGDLAVKLSLRQVKEILSLEPSLSEAFIPPYALHLHLSREILRKSLEEEGLRMLDHSYVLGSV  
 At1g27590 (1) -----MEVSTDEHLRRLNQRADLVKTDQSLFPEIVRNLSVANYSDIRYKKNANFWPFGSKNVKFEKLDL  
 Ptal\_Sp (1) -----MSSAEMLQLQAKTAMHNPTTEMLPKVLETASMYHNGNLSLKLPLAKPFTQVLDVVSMDSPANTERPFQAQYLPPLLMAQSTAD  
 Ptal\_Sc (1) -----MDSIIGRSQVFSETANLFTDEKTATARAKVDMCNELVIASPTKCELAKVQETVLGSCAELAEFLSVLSLHSDNMRKQVIVFVEQVCKVKVEL  
 SPK\_Hs (1) -----MDYIQGLNEENETASERIGEALKEARDAETIEKKLLSLSTAMHLLIDPSSLTSLINDFLTEILFAELNDSRLCLVFLKASKDFLTCKNTIER  
 SPK\_Dm (1) -----  
 SPK\_Ce (1) -----

**esp4-7, V85M**

**ESP4 (At5g01400)**

(88) LKSKLEDETPAVRQVACGADFRFTLERMAGLHSS-ENINLLSSYTIKIKFDECSAFQKQ---NSVSLCAMKQVLAITLILYPH  
 Os7g49320 (80) LHLNDDTPAVRQVKTGTTFAKV---RQVIVQLFPSSGGDLSLKLSEALKLSASAFQPMSS---NRARLAKKFKVKTLYLID  
 Os1g49940 (60) LSPFKHDDPQVYNGSASGTNFAAV---EETLITNCKGRDADAWLEMAWTKQFADAHNITHEV---PVTKLFAKGFETWLCFAQ  
 At1g27595 (1) -----  
 At1g27590 (92) VNLSDDEDFPKKSVGVTFFPK---EELNPFHHRG-KDWRGCELTYWVKVDTFATALEPG---CVVSLKAMKQVLAITLILYPH  
 Ptal\_Sp (71) ATRCQDRTIVSYLVNDEYVKKDQISGCTVYVFLHCST---PNDSTLDTFKLNEINDPKGN---KDFLSCRMKSCITLQVYQ  
 Ptal\_Sc (2) VYKYNIVLILCSYFVLDLVAKTNH---QRFEDLCKMLKFLSHWRATPRATDADDETVQWQLAQIDQNIQATKQVSLWQK  
 SPK\_Hs (1) -----M-Q-VYKALVMVSRVSLVQACDMDAGDITLSDSN---DDEITLTKKQVLAITLILYPH  
 SPK\_Dm (101) PPHVNVVSMRDNIAQVIRIQAGCGSVKNGVYVCLSLMEPQSAQANILSLAQLDNDNEN---DEEITLTKKQVLAITLILYPH  
 SPK\_Ce (99) YSYPILPNKSKRYEIKRIVYASN---VYVYVFEALMDKN---INA-SKADAFNLNANRCKMVSVDH---DDEITVTKKQVLAITLILYPH

**esp4-3, W138stop**

Used for Amino-terminal phylogenetic tree

**ESP4 (At5g01400)**

(177) **E**LEAD-----NQLIRGGVYKIGDLSISAKQGLLDQRHPAAKNSSTIILN  
 Os7g49320 (171) LDTPPDDPIEVTEDMCNVAVRGGVPLVNGDIAEASONGLLEQKPKPKVLSSTMIIVPTLSLSAIAQ  
 Os1g49940 (149) SKSDRMPQTEGRNLDLRSQFESLPAVLEAENRALIIVDLOSACAHQGSPLVGTINLSLAIA  
 At1g27595 (1) -----MCWSDSLGHACRSIPEFPAILNISCLSTGFLSD  
 At1g27590 (181) ASDPEKASSEG-SRHMNIGWLAGGVLNLPATMSSANRTFGVDFPQSANRPLGALISGVSYSIPLCLCRYFSLYSS  
 Ptal\_Sp (158) IRDRLVLTKS---DVSLEKVTHTPEVNSNIIRLANDLLEKFSIIFSDSLNLYVSGVNIIPV  
 Ptal\_Sc (183) SPSGNE---INSTLDNHPVAKPALESKAKRLDMLKLYIEQYVMSVFIGANLSLSPVFKRR  
 SPK\_Hs (66) MADSEIPRQ---EHDISDRDRDLYVQYVWEKKAALQQLKYPVHPAISNITATASGAN  
 SPK\_Dm (192) DEBSLKRQD---DLSADVDHCTFRREKQESNNIDVLPQFHTTISVSNLACTSSCT  
 SPK\_Ce (191) TGSNISWAREANTFRNISLSDRFRFESYHKTLQAEENFSALRQTTVAEATSONITVSESCEMTR

**esp4-1, G178R**

**ESP4 (At5g01400)**

(234) -----SLSSVAKRPAVCGRILPVLVSLDP-LSFIKGVAAATNLLAKTVFLSCLCKTPHAAAPWKRDLTSLAKIEIGGGQAQAKKDLFYKTNISQDKD  
 Os7g49320 (245) -----RPFYRERILPVLVSLDPASSIKVQVAP-AFLHAKSAPACLKTHSASAPWRALLEANQIINQADSIHSSNR  
 Os1g49940 (250) -----KRPVYRILPVLVSLDGPDSVLEAVKAPASLYSLKTAFLRSPCQAMIESKDTLVQGL-----RVLSPEGRATEQILRQVE  
 At1g27595 (33) SLSLSPFLVAVARRPVHYNTVSLVLELHFPNLETWKGCHAASVQYSIRTAFLGLPRLCTFSPILIE-SEDKLLR-----AFRAMAADVADQLRQVD  
 At1g27590 (265) -----  
 Ptal\_Sp (221) -----  
 Ptal\_Sc (247) -----  
 SPK\_Hs (131) -----  
 SPK\_Dm (254) -----  
 SPK\_Ce (263) -----

**ESP4 (At5g01400)**

(328) 4VDTEKTVSVEENPLCASSDVAESNLKSRKSGSEYINDLNGDASDGKRRAFPVSVEESTDGLNGNDGVLPVVAISTSQPSDSRQVDSGPAQCVG  
 Os7g49320 (320) -----VESLPLETSDNSNKMLDIDIDNAPEDGRNRKLRQSHHDQHEENKNVVEFSADPTSPNSNASTGNSEAYVYVS  
 Os1g49940 (299) KMTRNIERASRASKDEPSTLDMYPQSKRYPAASDADFATADGVAARFPDTSALNPPFGQASDYNSQVDNEANVHSDSDPALLANCOISPEKMTIE  
 At1g27595 (123) KLVNRNERAARENSWGSVISHQNSWLSKRRKMPQGEDDTNGLVAPRKHNTNWHMLTQQVNTQSGVPSINGE-SGNHLSDEILTYVGVVS  
 At1g27590 (265) -----  
 Ptal\_Sp (221) -----  
 Ptal\_Sc (247) -----  
 SPK\_Hs (131) -----  
 SPK\_Dm (254) -----  
 SPK\_Ce (263) -----

**ESP4 (At5g01400)**

(425) 501LFTVYSQGEAICSEELISSSADLITVYMANHNPCSSYLDGDELVMNLCIVGSDAQIKYP-----  
 Os7g49320 (402) FFAALAAQGDRAASLQLSSSAAIDLAVMVNCHVSHVEPQQQSPSAGQPSGAPSSLLSACF-----  
 Os1g49940 (399) NIALAAGDGAASLCLISTEADMAIDLETMKHETSILLTNSNGQKQKLESSESLNTPANLPS-----H  
 At1g27595 (219) NIALAAGDGAASLCLISLHPDLAIDITSMKHSSTPTLSSVATPDQVSSSTNVHSPPTPAQLPFDILPAGSSFEVPSLSSVADPR  
 At1g27590 (265) -----  
 Ptal\_Sp (290) SMLQYHTKRVDESLEKKROYEGNLSASAKRVKSSAVQSLERMQPQLSHDGLQNNPSTFASQTAINP  
 Ptal\_Sc (344) NSKKTLSRQDKLYSWEKRSLSLSTLSTKTPKTPVSPATGSSSTENMLDQLKQKTYLNKASGHQGNTPFN-----S-----PK  
 SPK\_Hs (210) ---SKDTRKRFDDSDSTKMKEPNIGEDDEKDEPQSGANLAKSQAQISQSDTDTAEFLQPLLT  
 SPK\_Dm (336) QEMARQKRIENYQSAAKRALCEQQVQQQREELDTELETRKQKSTVREKFLRFRNPFVTVI  
 SPK\_Ce (345) QKIAPPRPQHPVAPRXPQNGFEDDDDDDEAGSSTTVNLDKARTEALETGKFMICLNLETVMN



		1401	1500
<b>ESP4 (At5g01400)</b>	(1218)	ASQPEIQSLSRSTLAVLGLVPDSQGTQTSQVQANETQTSQEQQQQQASEPQOTSQSQQVSVPLSHSQVDHQEPSQVVASQSQSSPIGTVQSAMSQSQNS	
Os7g49320	(1162)	ANQPNVRSSTLPRSTLVVLGLAEDQQQPAPQAQSSQNQAETSSSAADTTTEVTQESSAVS-----	
Oslg49940	(1239)	VNQRNMHSILPRQILKVLGFINEPHQAPIPFVPAAMQTADATSSLPGATLM-----	
Atlg27595	(1047)	ANQPTIRSLPNSALSVLGLDNGQDSRSQMHPSDATSSIHGAALT-----	
Atlg27590	(265)	-----	
Ptal_Sp	(671)	-----	
Ptal_Sc	(786)	-----	
SPK_Hs	(947)	VRSFTPHQQAHIPNSIMTILEASGKQPEAKEAPAGPLEEDDLEPLTLAPAPAPRPPQDLIGLRLAQEKALKRQLEEEQKPKGGVVGAPSSSSPSPSPSA	
SPK_Dm	(1078)	AESMQDEPMNGSGITQQVLDIISGKSVDFVVTDESGGYISAEHIKKEAPDPSEISVISTVPVLTSLVPLPVPPPIGSDLNQPLPPGED-----	
SPK_Ce	(1082)	IIYSTIATQQQKNMDEKIKKEELHDKERENRERDKRLRREEKKEKEREKERTRESGKERLKTSNFVNFVSVLKRKTVLNPKFFFETEKIENKTNFVILFSK	
		1501	1600
<b>ESP4 (At5g01400)</b>	(1318)	PIDTGRSEMSQSQNSPIDTGRSEMSQSQNSPIDTGRSEMSQSQNSPIDTGRSEMSESQSSPIGQSQSSPIGTGQSDMSQTPQVSDSSAPEPTSHTRTSDP	
Os7g49320	(1222)	-----	
Oslg49940	(1290)	-----	
Atlg27595	(1092)	-----	
Atlg27590	(265)	-----	
Ptal_Sp	(671)	-----	
Ptal_Sc	(786)	-----	
SPK_Hs	(1047)	RPGPPPSEAMDFREEGPECETPGIFISMDDDSGLTEAALLDSSLEGPLPKETAAGGLTLKEERSPQTLAPVGEDAMKTPSPAEDAREPEAKGNS----	
SPK_Dm	(1166)	-----	
SPK_Ce	(1182)	KI-----	
		1601	1645
<b>ESP4 (At5g01400)</b>	(1418)	QASSQTLRDDDEKIDDTATSENEVTEIEKSKESSEEEEEEEEEEEEE	
Os7g49320	(1222)	-----	
Oslg49940	(1290)	-----	
Atlg27595	(1092)	-----	
Atlg27590	(265)	-----	
Ptal_Sp	(671)	-----	
Ptal_Sc	(786)	-----	
SPK_Hs	(1143)	-----	
SPK_Dm	(1166)	-----	
SPK_Ce	(1184)	-----	