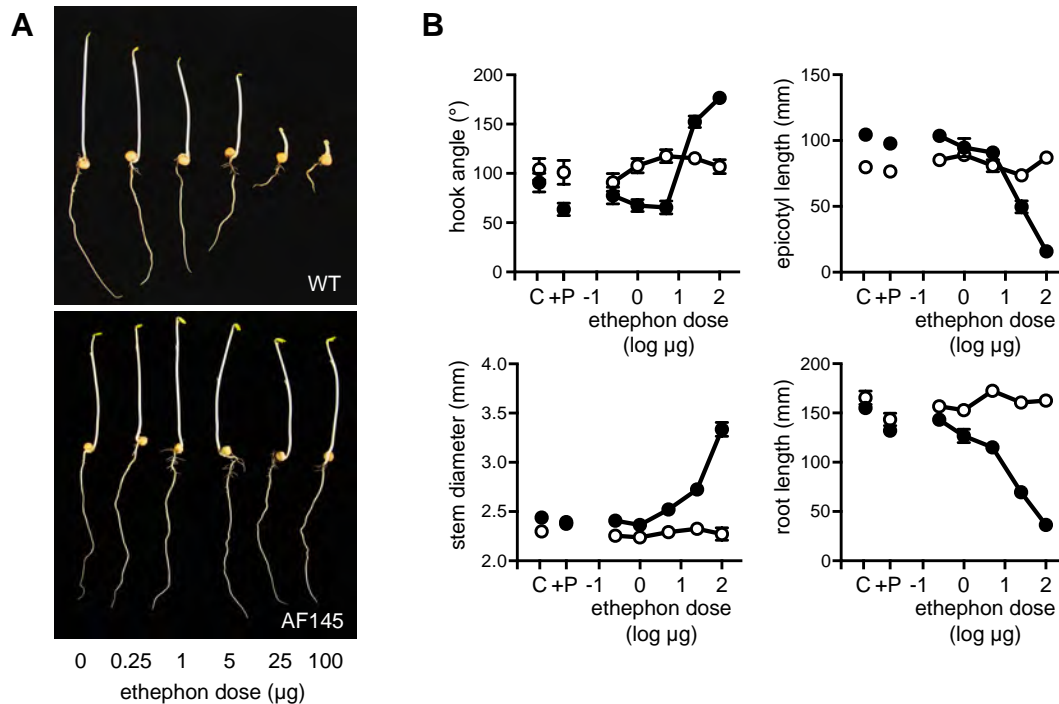


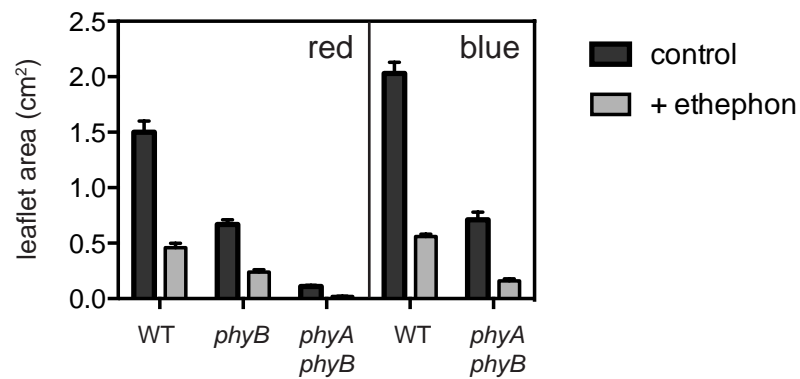
**Supplemental Table 1: Details of markers used for mapping and genotyping**

<b>Marker</b>	<b>Primer</b>	<b>Sequence</b>	<b>Tm (°C)</b>	<b>Size PCR (bp)</b>	<b>Type</b>	<b>Enzyme</b>	<b>Reference</b>
<b><i>EIN2</i></b>	MtEIN2-5F MtEIN2-5R	TGTGCCTCACAACCTTTTACC TGATAGATCCCTTCAGCTCC	55	1300	CAPS	EcoRI	this study
<b><i>EIN5</i></b>	MtEIN5-F1 MtEIN5-R2	ACGGCATGGAGTTTCGATAAC TGGTCGAACCAATGAAAAGA	57	600	CAPS	HpyCH4IV	this study
<b><i>FTc</i></b>	FTL-L1-2F FTL-C-TCC-R	CCTTCGGCAGGGATTCATCG GCAGGTGCTGGTCTCTTTCC	62	1300	CAPS	HpyCH4IV	Hecht et al., 2011
<b><i>LD</i></b>	LD-11 LD-12	ATCAGTGCTTTATTTGGCGTAA AAGACGGAAAAAGTTCTGTATTG	60	600	CAPS	SstI	Hecht et al., 2005
<b><i>LONG1</i></b>	HY5-LONG1-F HY5-LONG1-R	TTGATGGTCTACGGAATGAGG CAGAAGATGAAGAGAGGTCAGC	60	96	HRM	-	Weller et al., 2009
<b><i>PHYA</i></b>	PHYA-F01 PHYA-R01	TGATGGGGCTGCACTCTTTTAT CACGCTTCTGGCTTTCACAACCT	55	364	CAPS	MnII	Weller et al. 2004
<b><i>PHYB</i></b>	PHYB-F01 PHYB-R01	TGGGGCTGCTTTGTATTATC ACGGCTCTTCACCACTTCTA	55	355	CAPS	MnII	Weller et al. 2004
<b><i>PIF1</i></b>	MtPIF1-3F MtPIF1-2R	AGATCTCGTGCTGCTGAGGT TCCAGCATAGATGCTTTGTCA	50	300	CAPS	HincII	this study
<b><i>PM34L</i></b>	PM34L-F PM34L-R	GAAGCAAGACACGCAACCTGG CAGTTATGTAAGAGGAGCACTGG	60	1200	CAPS	TaqI	Aubert et al., 2006
<b><i>SECOND SUCROSE SYNTHASE (SS)</i></b>	SS-F SS-R	GGGAAAAGGATTTTGCAAC CCATCAACTCACTTTTAACCGG	60	700	CAPS	HpaII	Aubert et al., 2006
<b><i>SUGTRANS</i></b>	SUGTRANS-F SUGTRANS-R	GCATACTAGTATGGCTACTACCC CACAACCCATGGAACCTGCTCCC	60	170/150	Size	-	Aubert et al., 2006
<b><i>TIP</i></b>	TIP-F TIP-R	CACCTTGAAAGCCGGTTTGCC CGGTGAAGGCTCCACCAACC	60	700	CAPS	HaeIII	Aubert et al., 2006



**Supplemental Figure 1. AF145 mutant seedlings are insensitive to ethylene.**

WT and AF145 seeds were treated on the dry cotyledons before planting with 0.25, 1, 5, 25 or 100  $\mu\text{g}$  of the ethylene releasing compound ethephon in 5 $\mu\text{L}$  of ethanol, and germinated in darkness for seven days. **A**, Photographs of typical plants. **B**, measurement of shoot and root properties. Controls received either ethanol alone (C) or phosphate in ethanol equivalent to that released by the 100  $\mu\text{g}$  ethephon treatment (+P). WT and AF145 are represented by filled and open symbols, respectively. Values in **B** represent the mean  $\pm$  SE for  $n = 11-12$ .



**Supplemental Figure S2. Ethylene reduces leaflet expansion under red and blue light.**

WT and photoreceptor mutant seedlings were treated either with 25 $\mu$ g of the ethylene releasing compound ethephon in 5 $\mu$ L of ethanol or 5 $\mu$ L of ethanol alone and grown from sowing for 16 days under monochromatic red or blue light (all 15 $\mu$ mol m<sup>-2</sup>s<sup>-1</sup>). Leaflet area was estimated as the product of length and width of the larger leaflet from the first true foliage leaf (node 3). Values represent mean  $\pm$  SE for n = 7 to 12.

### Supplemental Figure S3: EIN2 protein alignment

AtEIN2 (*Arabidopsis thaliana*, AAD41077.1); CaEIN2 (*Cicer arietinum*, XP\_004493976.1); CsEIN2 (*Cucumis sativa*, Cucsa.124430.1); FvEIN2 (*Fragaria vesca*, mrna09749.1-v1.0-hybrid); GmEIN2a (*Glycine max*, Glyma.03G181400.3); GmEIN2b1 (*Glycine max*, Glyma.13G145100.3); GmEIN2b2 (*Glycine max*, Glyma.10G058300.2); LjEIN2a (*Lotus japonicus*, chr1.CM0012.1100.r2.m - phase: 0); LjEIN2b (*Lotus japonicus*, chr5.CM1729.230.r2.m - phase: 0); MdEIN2 (*Malus domestica*, MDP0000152033); MtEIN2 (*Medicago truncatula*, Medtr0041s0030.1); PpEIN2 (*Prunus persica*, ppa000305m); PsEIN2 (*Pisum sativum*, this study); PvEIN2a (*Phaseolus vulgaris*, Phvul.001G177500.1); PvEIN2b (*Phaseolus vulgaris*, Phvul.007G150600.1).

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          *           20           *           40           *           60
MtEIN2   : -----METEALSSEQTKSKMEAETLSTNP : 24
PsEIN2   : -----MEAERFSSEQLKSKMEAETLRFNH : 24
CaEIN2   : INSENSITIVEPROTEINLIKECICERARIETINUMMEAETLRTEQTKSTMEGEKLSNNH : 60
LjEIN2a  : -----MEAETLSTN-LKSKLEAETSNHDC : 23
GmEIN2a  : -----MVSSKSKMEAGTLSPNH : 16
PvEIN2a  : -----MKSSKSKMEAETLSPNH : 16
GmEIN2b1 : -----MEAETLNANH : 10
GmEIN2b2 : -----MEAETLNANH : 10
PvEIN2b  : -----MEAETLTANH : 10
LjEIN2b  : -----MEAETLKAYH : 10
MdEIN2   : -----MESTNPNANI : 10
PpEIN2   : -----MANLESANPSANN : 13
FvEIN2   : -----MESASCIANN : 10
CsEIN2   : -----MESTTLHTTH : 10
AtEIN2   : -----MEAEIVNVRP : 10
  
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          *           80           *           100          *           120
MtEIN2   : PPGFLIRALPAVIPALLISIGYVDPGKWVASIEGGARFGFDLVAFALIFNFAAIFCQYLS : 84
PsEIN2   : APGFLSRALPAVVPVLLISIGYVDPGKWVASIEGGARFGFDLVAFFTLIFNFAAIFCQYLS : 84
CaEIN2   : PPGFLSRLLPALVPVLLISVGYVDPGKWVASVEGGARFGFDLMAFTLIFNFAAIFCQYIS : 120
LjEIN2a  : PPGFVRRSLPSFVPMLLISLGYVDPGKWVASVEGGARFGFDLMAFTLIFNFAAIFCQYIS : 83
GmEIN2a  : PFCFLRQSLPAVAPVLLISTGYVDPGKWVATVEGGARFGFDLMAVMLIFNFAAIFCQYIS : 76
PvEIN2a  : PPSFLRQSLPAIVPMLLMSTGYVDPGKWVATVEGGARFGFDLMAFMLIFNFAAIFCQYIS : 76
GmEIN2b1 : PPGFLHRSLPAVVPVLLISIGYVDPGKWVAIAEGGARFGFDLMAFTLIFNLAAIFCQYIA : 70
GmEIN2b2 : PPGFLHRSLPAVVPVLLISIGYVDPGKWVAIAEGGARFGFDLMAFTLIFNLAAIFCQYIA : 70
PvEIN2b  : PPSFLHRSLPAVVPVLLISIGYVDPGKWVAVEGGARFGFDLMAFALIFNFAAIFCQYIS : 70
LjEIN2b  : IPSFLHPSLPVLPVLMIAIGYVDPGKWVAVEGGRFGFDLMAFTLIFSFAAIFCQYIS : 70
MdEIN2   : MPCVLQRLLPVVGPVLVISVGYIDPGKWAATAEAGARFGSDLAALMLIFNFAAILCHYLS : 70
PpEIN2   : MLCVLHRLLPVVGPALLISVGYLDPGKWAATAEAGARFGSDLAALMLIFNFAAILCHYLS : 73
FvEIN2   : RPCAVHQLLPVGPMLLIAVGYLDPGKWAATVEAGSRYGTDLAAVMFIFNLAAAILCHYLS : 70
CsEIN2   : QSCAHTRFIFPFAPALLVSTISYVDPGKWAATVEGGARFGFDLFVLVLLFNLAAAILCQYLS : 70
AtEIN2   : QLGFLIQRMVPALLPLVLLVSVGYIDPGKWVANIEGGARFGYDLVAITLLFNFAAILCQYVA : 70
  
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          *           140          *           160          *           180
MtEIN2   : ARVGVITGRDLAQCSDEYDTWTCLLLGIQAELSVIMLDLNMILGMAQGLNLIFGWDLFT : 144
PsEIN2   : ARVAVITGRDLAQCSDEYDTWTCLFLGIQTELSVIMLDLNMILGMAQGLNLIFGWDLFT : 144
CaEIN2   : ARVAVITGRDLAQCSDEYDTWTCLLLGIQTELSVIMLDLNMILGMAQGLNLIFGWDLFT : 180
LjEIN2a  : ARIGVITERDLAQCSDEYDTWTCMLLGIQAELSVIMLDLNMILGMAQGLNLIFGWDLLA : 143
GmEIN2a  : ARIGAITGKSLAQCSDEYDTWTCMLLGVQTELSVIMLDLNMILGMAQGLNLIFGWDLFT : 136
PvEIN2a  : ARIGVVTGKNLAQCSDEYDTWTCMLLGVQTELSVIMLDLNMILGMAQGLNLIFGWDLFS : 136
GmEIN2b1 : AKIGVITGKDLAQCSDEYDNWTCMLLGVQAELSVIMLDLNMILGMAHGLNLIFGWDLFT : 130
GmEIN2b2 : AKIGVITGKDLAQCSDEYDNWTCMLLGVQAELSVIMLDLNMILGMAHGLNLIFGWDLFT : 130
PvEIN2b  : AKIGVITGKDLAQCSDEYDSWTCMLLGVQAELSVIVLDLNLILGMAHGLNLIFGWDLFA : 130
LjEIN2b  : AKIGVITGKDLAQCSDEYDNWTCMLLGVQTELSVIMLDLNMMLGMAHGLNLIFGWDLFT : 130
MdEIN2   : ARIGVVTGRDLAQCSEEYDKGTCISLGIQTEVSAILSDLTMILGIAHGLNLIFGWDLFT : 130
PpEIN2   : ARIGVVTGRDLAQCSEEYDKGTCIFLGVQTEVSVILSDLTMILGIAHGLNLIFGWDLFT : 133
FvEIN2   : ARIAVVTGRDLAQCSEEYDKATCIFLGVQTEMSVILDLTMILGIAHGLNLIFGWDLFT : 130
CsEIN2   : ASIGVVTGRDLAQCNEEYDKCTCFLGIQAEASVILDLNLILGISNGLNLIFGWDLFT : 130
AtEIN2   : ARISVVTGKHLAQCNEEYDKWTCMFLGIQAEFSAILDLTMVVGVAHALNLIFGVELST : 130
  
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      *           200           *           220           *           240
MtEIN2 : CVFLTATGAVFHILLAILLDIEKTKFLGQFV--AGFVLLSFILGVFI-QSEVPVSMNGIL : 201
PsEIN2 : CIFLTATGAVFHILLLSVLLDIEKAKHLGQFV--AGFVLLSFILGLLINQSEVPLSVNGIL : 202
CaEIN2 : CVFLTATGAVFHILLLAVLLDIEKAKHLGQFV--AGFVLVSFILGLLINQSEVPLSMNGIQ : 238
LjEIN2a : CVFLTATGAVFHIVLAVFLDIEKTKILGQFV--AGFVLLSFIVGLLINQPEIPLSMNGIL : 201
GmEIN2a : CVFLTATGAVFHILLLSVLLDIEKAKILGPFV--AGFVLLAFILGLLINQPEIPLSMNGIP : 194
PvEIN2a : CVFLAATGVVFHILLLAVLLDIEKAKFLGQFV--AGFVLVSFILGMLINQPEIPLSMNGIL : 194
GmEIN2b1 : CVFLIATGAVFHILLLFAILLDIEKVKILGLFV--SGFVFLSFVLGTLINQPDIPLSINGIL : 188
GmEIN2b2 : CVFLTATGAVFHILLLFVLLDIEKAKILGLFV--SGFVFLSFVLGTLINQPDIPLSINGIL : 188
PvEIN2b : CVFLTATGAVFHILLLFVLLDIEKAKIVGLFV--SGFVFLTFVLGTLINQPDIPLSINGIL : 188
LjEIN2b : CVFLTATGAVFHILLLVVLLDIEKVKILGLFV--AGFVLLSFILGILINQPEIPLPMNGIK : 188
MdEIN2 : CVFLTAVNALYPLFSSFLETCKAKVLCIYV--AGFILLSFVLGVIISQPEMPRSMNGML : 188
PpEIN2 : CVFLTAVNAVLYPLFSTLLETCKAKVLCVCI--AGFIQLSFVLGVIISQPEMSFSMNGML : 191
FvEIN2 : CVFLTAVNAVLYPLFSTLLDTCAKFLCVCIIYVAGFILLSFVLG----- : 174
CsEIN2 : CVLLTGVAALFPPFADLLEDGRAKFLYICM--AGFVLLSLVLGVLISQPEIPLSMNLMP : 188
AtEIN2 : CVFLAAMD AFLFPV FASFL ENGMANTVSIYS--ACLVLILLYVSGVLLSQSEIPLSMNGVL : 188

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      *           260           *           280           *           300
MtEIN2 : INLSGESTFMLSLLGATLVPHNFYLHSSIVQWHQGPANISKDALCHNHFLAILLCVFSGL : 261
PsEIN2 : IKLSGESAFMLSLLGATLVPHNFYLHSSIVQRHQGPKNISKDALCHNHFLAILLCVFSGL : 262
CaEIN2 : IKLSGESAFMLSLLGATLVPHNFYLHSSIVQWHQGPENISKDALCHNHFLAILLCVFSGL : 298
LjEIN2a : IKLNGESAFVLSLLGATLVPHNFYLHSSIVQWHQDPTSISKDALCHNHFLTILLCVFSGL : 261
GmEIN2a : TRLSGESAFVLSLLGANLVPHNFYLHSSIVQWHQGLTISKNALCHNHFLAILLCVSSGL : 254
PvEIN2a : IRLSGESAFVLSLLGANLVPHNFYLHSSIVQWHQGPASISKNALCHNHFLAILLCVFSGL : 254
GmEIN2b1 : TKLSGESAFVLSLLGATLVPHNFYLHSSIVQWHQGSTTISKDALCHNHFLAIMCVFSGL : 248
GmEIN2b2 : TKLNGESAFVLSLLGAILVPHNFYLHSSIVQWHQGSTTISKDALCHNHFLAIMCVFSGL : 248
PvEIN2b : TKLSGESAFVLSLLGATLVPHNFYLHSSIVQWHQGSTTISKDALCHNHFLAICVFSGL : 248
LjEIN2b : TKLSGESAFVLSLLGATLVPHNFYLHSSIVQ----- : 220
MdEIN2 : TKLSGESAFALMSLLGASMPHSLYFHSSIVQCCQQQATVPK GALCHNHFLVAILCIFSGV : 248
PpEIN2 : TKLSGESAFALMSLLGASIMPHSLYLHSSIVQYQCQPTVSRDALCHHHLVAILCIFSGI : 251
FvEIN2 : -----QHQQQTVSKDTLCQNHFVAIFCMFNGI : 202
CsEIN2 : TRLNGESAFALMSLLGASVMPHNFYVHSSIVQHQHSPPNISKEVSCYNHFLAIFCIFSGI : 248
AtEIN2 : TRLNGESAFALMGLLGASIVPHNFYIHSYFAGESTSSSDVDKSSLCQDHLFAIFGVFSGL : 248

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      *           320           *           340           *           360
MtEIN2 : YLVNYYILMTTLANEFYS----TCPVLL-----MEQVLHSPIALIGFVLLIFLANQTA : 309
PsEIN2 : YLVNMLMTTANEFYS----TCPVLLTFQDALSSMEQVLRSPIALLGFFVILFLANQTT : 318
CaEIN2 : YLVNMLMTTANEFYS----TCPVLLTFQDALSPMEQVLRSPIALLGFFVILFLANQTT : 354
LjEIN2a : YLVNMLMTASANEFYS----MCPVLLTFQDALSPLEQVLRSPIVLLGFVLLIFLANQTT : 317
GmEIN2a : YLVNMLMTASANEFYS----TDPVLLTFQDALSPMEQVLRSPIALLGFFVILFLANQTT : 310
PvEIN2a : YLVNMLMTTANEFYS----TGHVLLTFMDALSPMEQVLRNPMALLGFLILLIFLANQIT : 310
GmEIN2b1 : YLVNMLMNAANEFYS----MGLVLLTFQDALSPMEQVLRSPIAMLAFLLLIFFSNQTT : 304
GmEIN2b2 : YLVNMLMNAANEFYS----MGLVLLTFQDALSPMEQVLRSPIAMLAFLLLIFFSNQTT : 304
PvEIN2b : YLVNMLMNAANEFYS----MGLVLLTFQDALSPMEQVLRSPIAMLAFLLLIFFANQTT : 304
LjEIN2b : -----VLRSPIALLAFLLLIFLFSNQTA : 242
MdEIN2 : YMVNYVFM TSAENLFYSP EASSGLVVLTFQDAMSLMEQVFWGPIVPASFLLVLLILSNQIT : 308
PpEIN2 : YLVNVALMTSAENEFY-----SGLGLTFQDVMSLIGQVFWGPIVSGAFLLVLFVSNQIT : 305
FvEIN2 : YLVNYYVLM TLAANAFY----TSRGLLTFQDAMSLIEQVFWGPIVPVAFLLVFLFSNQIT : 257
CsEIN2 : YVVNMLMNSAANVFYS----SGLALHTFTDALSLMEQVFGSSVVYVFLFLVFLFSNQIT : 304
AtEIN2 : SLVNYVLMNAAANVFHS----TCLVLLTFHDALSLMEQVFMSPILIPVVFLLMLLFSSQIT : 304

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      *           380           *           400           *           420
MtEIN2 : ALIWSIGGEVAVNGFLKLDIPGWLHYATIRVIAVLPALYCVWSSGAEGYQLLIFTQVLV : 369
PsEIN2 : ALIWSIGGEAVVNGFLKLDIPGWLHYVTIRVIAVLPALYCVWSSGAEGMYQLLIFTQVLV : 378
CaEIN2 : ALIWSIGGQVVNGFLKLDIPGWLHYATIRVIAVLPALYCVWSSGAEGMYQLLIFTQVLV : 414
LjEIN2a : ALIWSIGGEAVVHGFLKLDIPGWLHYATIRVIAVLPALYCVWSSGAEGMYQLLIFTQVLV : 377
GmEIN2a : ALIWSIGGEVVVRNFKLDIPGWLHYATIRVIAVLPALYCVWSSGAEGMYQLLLSTQVLV : 370
PvEIN2a : ALIWSIGGEVVVQGFKLDIPGWLHYATIRVITVSSALYFVWSSGAEGMYQLLLIFTQVLV : 370
GmEIN2b1 : ALIWSFGGEVVVQSFKLDIPGWLHYATIRVIAVLPALYCVWSSGAEGMYQLLIFTQIVV : 364
GmEIN2b2 : ALIWSFGGEVVVRNFKLDIPGWLHYATIRVIAVLPALYCVWNSGAEGMYQLLIFTQIVV : 364
PvEIN2b : ALIWSFGGEVVVHSFKLDIPGWLHYATIRVIAVLPALYCVWSSGAEGMYQLLIFTQIVV : 364
LjEIN2b : ALIWSIGGEVVVHRFLKLDIPGWLHYATIRVIAVLPALYCVWSSGAEGMYQLLIFTQVVV : 302
MdEIN2 : ALSWSIGGDVVLNEFLKVDLPGWLHCATIRIIAIVPALYFVWSSGAEGMYQLLIFTQVLA : 368

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PpEIN2 : TLSWSISGGQVVLNDFLKLDPGWLHCATIRIIAIVPALYFVWSSGAEGMYQLLIIFTQVLA : 365  
FvEIN2 : TLSWSISGGQVVLNDFLKLDPGWLHCATIRIIAVVPALYFVWSSGAEGMYQLLVSTQVLA : 317  
CsEIN2 : ALIWSISGGQIVLNTNDFLKLDPGWLHCATIRIIAIPALCCVWSSGAEGMYQLLIFSQVMV : 364  
AtEIN2 : ALAWAFGGEVVLHDFLKIETPAWLHRATIRILAVAPALYCVWTSAGDGIYQLLIIFTQVLV : 364

\* 440 \* 460 \* 480  
MtEIN2 : ALQLPSSVIPLFRVALSRSIMGAHKVSQSMEELLALITIFLGLVLCMNMIFLGMIFGSSDWA : 429  
PsEIN2 : ALQLPSSVIPLFRVAMSRSIMGAHKISQSLELLALITIFIGMLGLNIVFLVEMIFGNSDWA : 438  
CaEIN2 : ALQLPSSVIPLFRVAMSRSIMGAHKISQSLELLALVIFIGMLGLNIVFLVEMIFGNSDWA : 474  
LjEIN2a : ALQLPSSVIPLFRVAMSRSIMGPNKVSQSVELLALIIIFIGMLGLNIVFVEMIFGNSDWV : 437  
GmEIN2a : ALQLPSFVIPLFRVAISRIMGVHKISQFLELLASIIIFIGMLGLNIVFVEMIFGNSDWA : 430  
PvEIN2a : ALQLPSQVIPLFRVAISRIMGVHKISQFLELLALIIIFIGMLGLNIVFVEMMFGNSDWA : 430  
GmEIN2b1 : ALQLPSSVIPLFRVIASSRSIMGVHKIPQFVEFLALIIIFIGMLGLNIVFVEMIFGSSDWA : 424  
GmEIN2b2 : ALQLPSSVIPLFRVIASSRSIMGVHKIPQFVEFLALIIIFIGMLGLNIVFVEMVFGSSDWA : 424  
PvEIN2b : ALQLPSSVIPLFRVIASSRSIMGVHKIPQFVEFLALIIIFIGMLVNLNIVFVEMIFGSSDWA : 424  
LjEIN2b : ALQLPSSVIPLFRVIASSRSIMGVHKIPQFVEFLAWVIFIGMLGLNMVVFVEMIFGNSDWV : 362  
MdEIN2 : ALLLPSSVIPIFRIAASRPIMGAHKISQFVEFLSLITLIGMLGLKIIFFVEMIFGNSEWG : 428  
PpEIN2 : ALLLPSSVIPIFRIAASRPIMGVHKISQFVEFLSLITLIGMLGLKIIFFVEVIVGNSDWV : 425  
FvEIN2 : ALLLPSSVIPLFRVAASRQLMGAHKISQFVEFSAITLIGMLGLKVVVFVEMIFGNSDWV : 377  
CsEIN2 : ALLLPSSVIPLRVASSRIMGALKISQVFEFIAIGIFIGILGLKIIFFVEMIFGNSDWV : 424  
AtEIN2 : AMMLPSSVIPLFRVIASSRQIMGVHKIPQVGEFLALITIFLGLNIVFVEMVFGSSDWA : 424

\* 500 \* 520 \* 540  
MtEIN2 : CDLRNVLNGVSVLFSVLLIAGFLSICIMLRLATTPLRASAI---QLNAQVLNWDMPPEAV : 486  
PsEIN2 : ADLRNVNCGVSVSYAILLIIGFMSLCLMLWLAATPLRSANI--HQLNAKELNWDMPETV : 496  
CaEIN2 : GDLRNVNCGVSVSASVSLFAGFMSLCLMLWLAATPLRSANV---QLNAQVLNWDMPETV : 531  
LjEIN2a : GDLRNACNGVSVSYLVLLTIAFTSLCSMLWLAATPLKSANV---QSAQAWNRDTPETV : 493  
GmEIN2a : SDRNVNCGVSVSYLVLLTAAITSLCLMLWLAATPLRSASV---QLDAQWNWDMPETL : 487  
PvEIN2a : SDRNVNCGVSVSYVLLTITFSSSLCFMLWLAATPLRSLSV---RLDSKIWNWDMPKTL : 487  
GmEIN2b1 : GNLRNVNCGVSVSYLVLLCTAFASFCLMLWLAATPLKSASV---QLDDQAWNWDMPQAV : 481  
GmEIN2b2 : GNLRNVNCGVSVSYLVLLCTAFASFCLMLWLAATPLKSASV---QLDDQAWNWDMPQAI : 481  
PvEIN2b : GNLRNVNCGVSVSYLVLLCTAFASFCLMLWLAATPLKSASV---QLD-EAWNWDMPQAI : 480  
LjEIN2b : GNLRNINCGVSVSYVLLCTAFASFCLMLWLASTPLKSASV---QSDAQAWNWDMPKAI : 419  
MdEIN2 : GNLRNNGGSSM-----LFLTACASFGLMIWLAATPLKSAS--V-RLEAQVWNWELMEGT : 480  
PpEIN2 : NNLRSNAGSSMSV-PCVLLLTACATFCLMIWLAATPLKSAS--A-RLEAQVWNWDMHMG : 481  
FvEIN2 : DNLRDAGSSMS-----VLLITASASFCLMIWLAATPLKSAS--A-RIENQVWNWDMPKGV : 430  
CsEIN2 : VNLRNMGSGMSIPFVLLITACSSFCLMLWLAATPLKSATTIA-QLDAQVLNWDMAEVR : 483  
AtEIN2 : GGLRNNTVMGTSIQVTTLLVSSCASLCLILWLAATPLKSASN---RAEAQIWNWMDAQNAL : 481

\* 560 \* 580 \* 600  
MtEIN2 : LNPPVDGEEESHVTEITVGHEDASFQADEPKPALARSLEYPEV-SLASFRPDLHLPETVMEP : 545  
PsEIN2 : EIPLVGDEESYITEITAPHEETSVEVDEPKPALASTFEYPEV-SHESFRP--ILPETIMEP : 553  
CaEIN2 : SNPLVEGDEESYITEITVCHEDAYVEAEPKPALARTLEYSEV-SLASFRP--DLPETIMEH : 588  
LjEIN2a : PNPSVDGDEESYITEITRCHEDASVEVEEPALATLLEYSDV-SLRSFHP--DLPETIMEP : 550  
GmEIN2a : PTPPVGDEELYLITEKKCHEDVSKHVEHTPAVAKSLDYSVDV-SLPSFHP--DLPESLMEP : 544  
PvEIN2a : PNPPVIGDKSYLITEITRCHEDASMQVEEPTPAVAKTLEYPDV-SYPSFHP--ALPKSVMEP : 544  
GmEIN2b1 : EKSRLDNEETDKETRYQGDASVQKPEPALARTLEYSDV-PVASFHL--DLPETIMEP : 538  
GmEIN2b2 : EKSRLDNEETDKETRYEGDASVQKPEPVLARTLEYSDV-PIASFHH--DLPETIMEP : 538  
PvEIN2b : EEPRLDSEETDLEKSYEGDASVQVMEPSPALTRTLEYSEL-PVASFHL--ELPETILEP : 537  
LjEIN2b : PNTWANAEKSEVTEITRYEGDEFVQKPEPALARTPEYSDA-PVASFHP--DLSETIMEP : 476  
MdEIN2 : PDSLTNEEENINRAEPQYHREASVQKHEPSPSFG--LDADSE--VANFDL--DLADTIMEA : 534  
PpEIN2 : PDSITKKEEINISEPKYHREVSQKHEPSPSFGALDSDSE--VASFDL--DLPETITEP : 537  
FvEIN2 : SEPFRNKE-TDIAEHNYHRADIQKHEPSPSSGDALDRELDTAVANFDF--VLPETLLEP : 487  
CsEIN2 : PDSSEERENIDLGKSSYSAP-----IESHSDLSSTKFDL--NLPENIMEP : 527  
AtEIN2 : SYPSVQEEIERTETRRNEDESTVRLS-----RVKDQLDTSVTSSVY--DLPENILMT : 534

\* 620 \* 640 \* 660  
MtEIN2 : D--PQVNAIKENH-SVAPS--VSTSDSGTVSKIVANDT-----SSSDSKLK-DTKTI-I : 592  
PsEIN2 : D--PQVNTVKGNN-SVTPS--VSTSETGEAS-TVVND-----SSDSRHA-DTKTI-M : 597  
CaEIN2 : D--PQVNDVKENH-FVTSS--VSTSESGAEA-TVVND-----SSDSRFE-DTKTI-V : 632  
LjEIN2a : D--PHANAVRENH-AITSS--ASTSELSEAVSTVFNDISDSTVEDISDSTVA-DSKMIKM : 604  
GmEIN2a : E--PHVNAVRDNY-SLIS---TSTSEL-EAVYAVVNE-----TSDSCLE-DTKTITM : 588  
PvEIN2a : E--LHVNVARANH-SAML---ASTSES-EVVTIVINK-----ISNSQLE-DTKSITM : 588

GmEIN2b1 : D--VPVTTVRETH-PFTSFPCSPTS-VKESASTSESEAVPAVSNETSIIILG-HSKTLKT : 593  
 GmEIN2b2 : D--VPVTTVRETH-PFTSFPPSPTSVVKESASTSESEAVPAVSNETSIIILG-DSKTLKT : 594  
 PvEIN2b : D--VPVITVRETH-SFTSFPCSPITPVVKESISTSESEAVAAASTETSIGIRLV-DAKTLKT : 593  
 LjEIN2b : D--LHVTTVSEETH-SITSFPCSQTSVVKESASTSESEAVSDVISETPDIRLE-DARSSDM : 532  
 MdEIN2 : DQELHQTTVAENNNSHITFPCSPKSRMEGSRSAVESFPVSTVVNDVSDVTLE-DTSALKF : 593  
 PpEIN2 : DEEHLTTVVENG-SRITFPHPKCHMEGSTSIVESTPVSTVVNEVSDVTLE-GTSALKI : 595  
 FvEIN2 : DQELQLSGVEENS-SLGTFFPHSAKSKKEPTPVVELTRVPTVANEVSDVTVL-GTDTVKF : 545  
 CsEIN2 : DQVLGSVNQNEFR-SSTVVPSSPKYVQEELESTEELVSSSIIVTHDVPDSTLA-DKKVLKI : 585  
 AtEIN2 : DQEIRSSPPEIRELDVKYSTSQVSSLKEDSDVKEQSVLQSTVVNEVSDKDLIVETKMAKI : 594

MtEIN2 : EANAPIEKTVE---IEDDSNVERDDDD--VDSWETEIESSRAVLANAPSSTSEGPPSFRSI : 647  
 PsEIN2 : ERDAPIEKTVE---IEDDSNAERDDDD--GESWETEIESSRVVLPNAPSSTSEGPPSFRSI : 652  
 CaEIN2 : ETNAPVEKTVE---IEDDSNAERDDDD--GDSWETEIESSRAVLANAPSSTSEGPPSFKSI : 687  
 LjEIN2a : ETGAPVEKTLE---VEADANAERDADD--GDSWETEIESSRVVSESSPLTSDGPASFRSI : 659  
 GmEIN2a : ETN-----AERDDDD--SWETEIEPSGVVSASVPSSTSDGPASFRSL : 627  
 PvEIN2a : ETNNPIEKTME---VEGDSNVERDDDDGDSWEAEIEPSGLVLANVPSSTSDGPASFRSL : 645  
 GmEIN2b1 : ETTAPVEKTVE---IEGDSNAERDDDD--GDSWETEIEIQKVVSL-APSSASDGPASFRSL : 647  
 GmEIN2b2 : ETTAPVEKTVE---VEGDSNAERDDDDY--GDSWETEIEIPKVVSL-APSSASDGPASFRSL : 648  
 PvEIN2b : ETSASVEKTVE-----DSIAERDDDD--GDLWETEIEISKVVSL-APSSAPDGPASFRSL : 644  
 LjEIN2b : EAHAPVEKTVE---VEQDLNAERDDDD--VDLWETEIEETSKAVSASAPSSASDGPASFRSL : 587  
 MdEIN2 : KSTESIEKTV---EAADLPTEKDDDE--GDTWEPEIESSKGVSGSTVPLASEGSGSFRSL : 648  
 PpEIN2 : ESTEPIEKTVGVEGVEGDLNPKDDDE--GDTWEPEIDSLKGVSESTAPLTSEGPGSFRSL : 653  
 FvEIN2 : ESTEQVEKTL---ATEGDLPTKDDDE--GDTWEPEIDSLKEASESTT-LTSEGPGSFRSL : 599  
 CsEIN2 : ESVEAVEKTVG---IDGDLRSEKDDYE--VDNWEAEIEESLKEISGNIPTSSTSEGPGSFRSI : 640  
 AtEIN2 : EPMSPVEKIVS---MENNSKFIEKQVDE--GVSWETEIEATKAAPTSNFTVGSDDGPPSFRSL : 649

MtEIN2 : SGKSDDGCSFGSLSRIEGLGRAARROLAATLDEFWQQLYDFHGQATQAAKAKKIDVLLG : 707  
 PsEIN2 : SGKSDDGCSFGSLSRIEGLGRAARROLTLILDEFWQQLYDFHGNPSQ--TAKKFDVLLG : 710  
 CaEIN2 : SGKSDDGCSFGSLSRIEGLGRAARROLAAILDEFWQQLYDFHGQATQEAkakKIDALLG : 747  
 LjEIN2a : SGKDEEGNSFGSLSRIEGLGRAARROLAAVLDEFWQQLYDFHGLATHEARAKKIDDLLG : 719  
 GmEIN2a : NGKSDDEGNSCGSLSRIEGLGRAARROLATVLFDEFWQQLYDLHGQVTQEAkakKIDLLG : 687  
 PvEIN2a : NGKIDEGNSFGSLSRIEGLGRAARROLAFVLDEFWQQLFDFHGHITQEAkakKIDLLG : 705  
 GmEIN2b1 : SGKSDDGNSIGSLSRLAGLGRGARROLAAILDEFWQQLYGFHGHQFTQEAkakKIDVLLG : 707  
 GmEIN2b2 : SGKSDDGNSIGSLSRLAGLGRGARROLAAILDEFWQQLFHFHGHQFTQEAkakKIDVLLG : 708  
 PvEIN2b : SGKSDDGNSIGSLSRLAGLGRGARROLAAILDEFWQQLYDFHGHQFTQEAkakKIDVLLG : 704  
 LjEIN2b : SGKSDDGNSIGSLSRLAGLGRGARROLAAILDEFWQQLYDFHGHKFTTDAKAKRLDVLG : 647  
 MdEIN2 : SGKDDGCSAGSLSRLAGLGRAARROLAAVLDEFWQQLYDFHGNVIQDAKAKKIDLLG : 708  
 PpEIN2 : SGKDEEGCSAGSLSRLAGLGRAARROLAAVLDEFWQQLYDFHGNVIQEAkakKIDLLG : 713  
 FvEIN2 : SAKDEEGCSAGSLSRLAGLGRAARROLAALDEFWQQLYDFHGNVIKEARTKKIDLLG : 659  
 CsEIN2 : GGRSEEGNGTGSLSRLAGLGRAARROLTGILDEFWQQLYDFHGVPTQDAKVKKIDLLG : 700  
 AtEIN2 : SG---EGSGTGSLSRLQGLGRAARHLSAILDEFWQHLYDFHGHQLVAEARAKKIDQLFG : 706

MtEIN2 : MGVDSKPTA----SIQKVDACGKDYSE--YLVSVGGRASDNLINAGPYDYSNQPRMQSNSE : 762  
 PsEIN2 : TDVDSRPTT----SIQKVDPCGKDYSE--YLVSACSRASDTSINAGPYDYSAQPRMQSNSE : 765  
 CaEIN2 : VGVDSRSTT----SIQKVDVCGKDYSE--YLAPVCGRLSDTFINAGPYDYSNQPRMQSNSE : 802  
 LjEIN2a : LGADSRPTS----SFQRVDACGKDYSE--YLSLVGGRSTDTPMNASSFDSSKQPRMQSNSE : 774  
 GmEIN2a : VGVDSRPTS----SIQKVDACGKDYSE--YLVSVRGRASDALMNSASYDSSKQPMMQSNSE : 742  
 PvEIN2a : VGVDLRPTS----SIQKVDASRKDYSE--YLSVVRGRASNTLANSDLYDYSKQPMMQSNSE : 760  
 GmEIN2b1 : --IDSRITG----SIQRMDPCGKEYSE--YLI SVGSRAPDTLMNSAPYESPQRNRIQSNLD : 760  
 GmEIN2b2 : --VDSITLG----SIQKVDSC--KACYE--YFKSVGSRAPDTLMNSAPYESPRLNRMQSNLE : 760  
 PvEIN2b : --VDSRLTG----SIQKVDTCGKEYPE--KWI SAGS--IPDSL MNSASYDSPRQHRMQSNFE : 756  
 LjEIN2b : --VDSRLAGG---SIQKVD SNAKEYSE--YLIPVGRAPDTSMNSAPYDSPRQHRMQSNME : 701  
 MdEIN2 : SDSK S-----VSSLKVDTS PKETS G--FFPSAGGRGSDSLISSSLYESAKQHRVQSSLE : 761  
 PpEIN2 : LDSKA-----ASSSLKVDTS AKELSG--YFPSAGGRGSDPIMNSSLYDSPKQQRVQSSLE : 766  
 FvEIN2 : SDSKASSAASSASSLKD DTTAKEVSG--CFPSVGGKGS DPLINLSLYDSVNQQR LONSIE : 718  
 CsEIN2 : -----FTSLKLD AVGKDFPH--SSP--IGCKTSDP--ISSSLYDSPK SQRVQSGLE : 745  
 AtEIN2 : TDQKS-----ASSMKADSFCKDISG YCMSPTAKG MDSQMTSSLYDSLKQQRTPGSID : 759

MtEIN2 : SAYGLQRSSS--SVRASPIQLLDAYVQSSN--RNINDSGERRYSSVRNLHSSEAWD--YQPAT : 819

PsEIN2 : SSYGLQRSSS-SVRANPIQLLDAYVQNSA-RNFLESGERRYSSVRSLHSSSEAWD-YQPAT : 822  
 CaEIN2 : SSYGLQRSSS-SVRASPIQLLDAYVQNSS-RNFIDSGERRYSSVRNLHSSSEAWD-HQPAT : 859  
 LjEIN2a : SPYGLQRSSS-SSMANPIQLLDAYVQ----RNVLD SGERRYSSVRNLHSSQAWD-YQPAT : 828  
 GmEIN2a : S-YGLQRSSS-SMWANPIQLLDAYVQNSS-HNLLD SGERRYSSVRNLHSSSEAWD-YQPAT : 798  
 PvEIN2a : S-YGLQRSSS-SMRTDPIQLLDAYVQNST-HNLLD SGERRYSSVRNLHSSSEAWD-YQPAT : 816  
 GmEIN2b1 : ASYGLQRSSS-SIRANPVQFMDEYVQTSS-RNLLDAGERRYSSVRNLPTSAAWD-YQPAT : 817  
 GmEIN2b2 : ASYGLQRSSS-SIQANPVQFMDEYVQTSS-RNLLDAGERRYSSVHNLPTSAAWD-YQPAT : 817  
 PvEIN2b : PSYGLQRSSS-SVRTNPMQFMDEYVQTSN-RNLLSAGERRYSSVRNVPTSRSDW-YQPTT : 813  
 LjEIN2b : ASYGLQRNYS-SIRANSTHLLDDYAPTSC-RNLVDAGERRYSSVRNLPSGGVWD-YQPAT : 758  
 MdEIN2 : S-YAVQVQSS-SLPSRMQLLDAYVQNSS-HSIIIGSGERRYSSVRSIPTSESWD-YQPAI : 817  
 PpEIN2 : S-YGVQVQSS-ALPSRVQLLDAYVQNSS-RSVIDSGERRYSSVRSIPSESWD-YQPAT : 822  
 FvEIN2 : SAYCAVQSS-LIWPGHMQLLDAYVQNSS-RSVIDLGERRYSSVRSIPSESWD-YQPAT : 775  
 CsEIN2 : PPYGIQKGHQ-PLWSNHMQHWDAYVNNSS-HNALD SGVKRYSSLRSLPSTESWD-YQPAT : 802  
 AtEIN2 : SLYGLQVQSS-PSPLVNRMQMIGAYGNTINNNAYELSFERRYSSLRAPSSSEGWEHQPAT : 819

\* 920 \* 940 \* 960  
 MtEIN2 : IHCYQTASYLSRQV KDRSSEENINGSMLPTSLKSPS-----TGNPNYRDSLAFVLGKK : 871  
 PsEIN2 : IHCYQTASYLSRQV KDRSSEENINGSMLQSSLKSPS-----TGNSNY--SLAFALGKK : 872  
 CaEIN2 : IHCYQTASYLSRQV KDINSEENINGSMLQSSLKSPS-----TSNTNYRDSLAFALGKK : 911  
 LjEIN2a : IHCYQTASYLSRGGNDRNSDNVSAPMQLSSLKTPS-----VGNTNYRDSLAFALGKK : 880  
 GmEIN2a : IHCYQTASYLSRQV KDRNSANLNCQV DLSSLKSPS-----IVNTKYRDSLAFALGKR : 850  
 PvEIN2a : IHCYQTASYLSRQV KDTDSANLNGPVDLSSLKSPS-----IVNAKYRDSLAFALGKR : 868  
 GmEIN2b1 : IHCYQVSSYINQV GKD TNSDNLNGLRESPSMGNTNHYRNSMGNT--NYRNSIAFALGKK : 874  
 GmEIN2b2 : IHCYQVSSYINQV GKD TNSDKL NGLRESPSMGNTN-----NYRNSIAFALGKK : 865  
 PvEIN2b : VHCYQVASYINQV GKTNSDNLNGLMESP SMGIMSNYRNSIGNTNNYRNSIALAMGQK : 872  
 LjEIN2b : VHCYQIASYMSQV GKRNSDNLNAPMELSPMKSPS-----MSSTNYRNSI-LALRQK : 809  
 MdEIN2 : VHDYXIASYLNRMENDKS DNLNGLQMEPSV LQSGSS-----LGAGN-YRDSLAF TMGQK : 870  
 PpEIN2 : IHSY-HPSYLNRIAKDRGFDNLNGLQME SAALQSASS-----LGAAN-YRDSLAF TMGQK : 874  
 FvEIN2 : VHCYQMPSYLNRN--DRSSNLNGLQIE SPALNSASS-----LGAGN-YRDSLAF TMGQK : 826  
 CsEIN2 : VHCY-QLTYLNRMAKDRSSGN SNGQLDSSGSKYHTL-----GGGGAGLRDSVAFAMGQK : 855  
 AtEIN2 : VHCYQMKSYVDNLAKERLEA-HQSRGEIPTSR SMA-----LGTLSY TQQLALALAKQK : 870

\* 980 \* 1000 \* 1020  
 MtEIN2 : IHN GSGVGHPPG---FENVAVSRNRQLQTERS NYDSSSPGAAANT-VSSVNTKKYHSLPD : 927  
 PsEIN2 : IHN GSGVGHPPG---FENVAVSRNRQLLSERS NYDSC TSGPAANT-VNSINTKKYHSLPD : 928  
 CaEIN2 : IHN GSGVSHPPG---FENVAVSRNRQLQSERS NYDSCSSGPAANT-VNSVNTKKYHSLPD : 967  
 LjEIN2a : IHN GSGLGQPPG---FEN--VSRNSQLQSERS QYDFCSSGPADNT-VSSVNTKKYHSLPD : 934  
 GmEIN2a : IQSGSGVGO PPG---FPNVAVSRDSQLQSERF YDLCCSSGSADNT-VNSVNTKKYHSLPD : 906  
 PvEIN2a : LCSGQSVGO PPG---FPKVAISRDCQLQSER SHYDVCSSGSADNS-VNSVNTKKYHSLPD : 924  
 GmEIN2b1 : LQNGSGLSQ PPG---FQNI AVSKNSQLPSE RSYD SRPSG PVDST-VSSVNAKKYHSLPD : 930  
 GmEIN2b2 : LQNGSGLSQ PPG---FQNI AVSKNSQLPSE RSYD SRPSG PVDST-VSSVYAKKFHSLPD : 921  
 PvEIN2b : LQNGSGLSQ PPG---FQNI AVPKNSQLPSE RSCY----G PADNS-VSSVNAKKYHSLPD : 923  
 LjEIN2b : MQNGLCAGQ PPG---FENVSTSMNCRIPSE RSYD SRTSGSTNNA-VSSVNTKKYHSLPD : 865  
 MdEIN2 : LQTGLCAGQ ASS---FQNF TVSRNSPQSE RPYD PRSSGIAENV-VSPANAKKYHSLPD : 926  
 PpEIN2 : LQNGLCAGQ ASI---FQNH TVSRNSPQSE RPYD LHPSGIAENV-VSSANAKKYHSLPD : 930  
 FvEIN2 : LQNGLCAGQ ASS---FQNL TVSRQSPQSE RPYD VPSSGISENA-VNSANAKKYHSLPD : 882  
 CsEIN2 : LQNGLCAGQQA PPGFSNITVSRKPSSSE RKYD YDHSLSGTGENL-VSVSNTKKYHSLPD : 914  
 AtEIN2 : SQNGLTPGPA PG---FENFAGSR SISRQSE RSYGV PSSGNTDTVGA AVANEKKYSSMPD : 927

\* 1040 \* 1060 \* 1080  
 MtEIN2 : ISCYSPHRAGYVSD-KNAPWDG SVG---YGSFAGRMGYEPSMYSNSGSRAGGAHLAFDE : 983  
 PsEIN2 : ISCYSPHRAGYVAD-KNAPWDG SVG---YGSFAGRMGYEPSLYSNPGSRAG-AHLAFDE : 983  
 CaEIN2 : ISCYAIPHRAGYASD-KSAPWDG SVG---YGSFAGRMGYEPSLYSNPGSRAG-AHLAFDE : 1022  
 LjEIN2a : ISCYSPHRAGYVSN-KNAPQDGS LG---YGSFASKTCYEPSLYSNPGSRAG-AHLVDFE : 989  
 GmEIN2a : ISCYSPHRAGYVSD-KNAPRDG SVG---YGSFASRTCYDQSLYLNSGSRAG-GHLAFNE : 961  
 PvEIN2a : ISCYSPHRSAVYVSD-KNAPS DGSAG---YGSYASRTCYQRLPYNSGTRTG-GHLTFNE : 979  
 GmEIN2b1 : ISCYAIPHRDVMYSD-KSAPWDG SVGG---YRSSASRTHYEPSLYSNPGSRAG-APLAFDV : 986  
 GmEIN2b2 : ISCYAIPHRDVLSD-KSAPWDG SVGG---YRSSASRTHYEPSLYSNPGSSTG-APLAFDV : 977  
 PvEIN2b : ISCYAIPHRDAYISD-KSAPWDG SVGG---YRSSTGRTHHEQSLYNSGSRAG-APLAFDV : 979  
 LjEIN2b : ILCYAIPARDAYMSD-KSAPWDI SVGG---YGSANMTRYQSSLYNSGSRAG-APLAFDV : 921  
 MdEIN2 : IH-----REL YMPD-KNANWESP LG---YGSAGMTGYESSLYNSGVRTG-APLAFDE : 975  
 PpEIN2 : IH-----RDL YMPE-KSANWESP VG---YGSSTGITNYESSLYNSGARTG-APLAFDQ : 979  
 FvEIN2 : IN-----RDL YNSS-KSAPRDP PPG---FG---IMGYESSLYPKSGV RGG-GSLAFDE : 927  
 CsEIN2 : IH-----RDQHTSD-KSSQWDN VSG---YGT SIGRITARG-VSTNSG SRLV-SPLAFDE : 962



AtEIN2 : **ISQLSASARNMHPNNKSGYWDPSGGGGYCASYGRLSNESLYSNLGSRVG-VPSTYDD** : 986

\* 1100 \* 1120 \* 1140  
MtEIN2 : **VSP-----YREALSSQFSSGFDTGSLWSRQPFQFGVAGKIHNVAMEG-AGSRPNAIVQE** : 1037  
PsEIN2 : **VSPSKV--YREALSSPLSSGLDTGSLWSRQPFQFGVADKSHNVAMEG-AGRRPNAIVQE** : 1040  
CaEIN2 : **VSPSKVYSVREAFSSQLSSGFDTGSLWSRQPFQFGVADKIHNVAMEG-AGSRPNAIVQE** : 1081  
LjEIN2a : **LSQIKL--YRETLSSQLNSGFNSGSLWSRQPFQFGLANKIHNVPTEG-VGSRPNASVQE** : 1046  
GmEIN2a : **LPLSEV--YNKALSSQLSSGFDTGSLRSRLPYEQFGVAEKIPNVAMEA-VGNRPNAIAQE** : 1018  
PvEIN2a : **LSSSKA--YNEALSSQLNSGFDTGSLRSRLPCEQFG-PEKNRNIAMEG-VGSRPKAIVQE** : 1035  
GmEIN2b1 : **LSPSKA--YSEELSSQLSSGFGTGSLWSRQPFQFGVDDKIHNAAATED-VGNRPSATTQE** : 1043  
GmEIN2b2 : **LSPSKV--YGGVLSQLSSGFGTGSLWSRQPFQFGVDDKIHNAAATED-VGNRPSATTHE** : 1034  
PvEIN2b : **LSPSKV--YSNVLSQLSSGLGTGSLWSRQPFQFGVDDRVHSASTED-VGNRRSAITQE** : 1036  
LjEIN2b : **LSPTKV--YSDVLSQLSSGYGTGSLWSRQPFQFGVDDKIQNVAP-D-VGSRPSTTAKE** : 977  
MdEIN2 : **LSP-K--VY-NSLSSQSSSTFNTGSLWSRQPFQFGVADTNRTIGSG--IGNRVGSVNQE** : 1029  
PpEIN2 : **LSPSQ--VYRDAFSSQONSSTFNTGSLWSRQPFQFGVADNNRTIGSGG-FGYRAGSVSQE** : 1036  
FvEIN2 : **VSPSN--VYKDVRSOPNSNYGTGSLWSRQPFQFGVADNNRSIGTA--VGSRAGSAGME** : 983  
CsEIN2 : **LSPAN--VYSGALSPOMNPHLDSGSFVHROPSEQFGLDKNSNSESKG---IGRLHSISHE** : 1017  
AtEIN2 : **ISQSRG-GYRDAYSPLQSAATTGTGSLWSRQPFQFGVAERNGAVGEELRNRSNPINIDNN** : 1045

\* 1160 \* 1180 \* 1200  
MtEIN2 : **ITF-EDIEGKLLQSVRLTIMKLLKLEGSDFWLFKQNDGIDEDLIDRVAARDKFVYEIEARE** : 1096  
PsEIN2 : **ITF-EDIEGKLLQSLRLCIMKLLKLDGSDFWLFKQNDGIDEDLIDRVAAREKFVYEIEARE** : 1099  
CaEIN2 : **ITF-EYIEGKLLRSLRLCIVKLLKLEGSDFWLFKQNDGIDEDLIDRVAAREKFVYEIETRE** : 1140  
LjEIN2a : **ITLSVDIEGKLLQAVRLCIMKLLKLEGSDFWLFKQNDGIDEDLIDRVAAREKFVYEIETRE** : 1106  
GmEIN2a : **ITSFVDIEGKLLQSLRLCIVKLLKLDGSDFWLFKQNDGIDEDLIDRVAAREKLFYIEIETRE** : 1078  
PvEIN2a : **IT-FVDMERKLLLSVRLCIVKLLKLEGSDFLFRQNGGADEDLIDRVAAREKLVVCELETRE** : 1094  
GmEIN2b1 : **ITSVVDIDGKLLQSFRCILKLLKLEGSDFWLFKQNDGIDEDLIDRVAAREKFVYEIETTE** : 1103  
GmEIN2b2 : **ITSVVDIDGKLLQSFRCILKLLKLEGSDFWLFKQNDGIDEDLIDRVAAREKFVYEIETTE** : 1094  
PvEIN2b : **ITSVVDIDGKLLQSFRCILKLLKLEGSDFWLFKQNDGIDEDLIDRVAAREKFFSEVETTE** : 1096  
LjEIN2b : **ITSSVDIDNKLQSFRCIVKLLKLEGSDFWLFKQNDGIDEDLIDRVAAREQFIYEVETTE** : 1037  
MdEIN2 : **ITSVADSEAKLLQSFRCIVKLLKLEGSDFWLFKQNDGIDEDLIDRVAAREKFLYEAEETRE** : 1089  
PpEIN2 : **ATSVADSEAKLLQSFRCIVKLLKLEGSDFWLFKQNDGIDEDLIDRVAAREKFLYEAEETRE** : 1096  
FvEIN2 : **ATSVADSEAKLLQSFRCIVKLLKLEGSDFWLFKQNDGIDEDLIDRVAAREKILYDAETRE** : 1043  
CsEIN2 : **ASFVNSSEARLLQSFRCIVKLLKLEGSDFWLFKQSDGADEELIDCVAAREKFLYEAEARE** : 1077  
AtEIN2 : **ASSNVDAEAKLLQSFRCILKLLKLEGSDFWLFKQSDGVDEELIDRVAAREKFIYEAARE** : 1105

\* 1220 \* 1240 \* 1260  
MtEIN2 : **INQVIHMCDTRYFPPSDRKSVMKNEANASSLVSVPNCGEGCVWRADLIISFGVWCI** : 1156  
PsEIN2 : **INQVVIHMCDTRYFPPSDRKSVMKNS-EANASSLLVSSVPNCGEGCVWRADLIISFGVWCI** : 1158  
CaEIN2 : **MNQVIHMCDTRYFPPSDRKSVMKNEANASSNPLVSSVPNCGEGCVWRADLIISFGVWCI** : 1200  
LjEIN2a : **MNH--MAGESRFPPSDRKSVMKNEANASSSFSVSSVPNCGEGCVWRAGLVISFGVWCI** : 1164  
GmEIN2a : **MNQVIHMCDTRYFPPSDRKSVMKNSGAYSSGFSVSSVPNCGEGCVWRADLIISFGVWCI** : 1138  
PvEIN2a : **TSQVNHVGEAQYCIADRLS-----FSSVPVPCGEGCVWRADLIISFGVWCI** : 1142  
GmEIN2b1 : **MNR-NHMGETRYLSSDGKSCSSMKNEANWSSFSVTSIPNCGEGCVWRADLIISFGVWCI** : 1162  
GmEIN2b2 : **MNR-NHMGETRYLSSDGKACSSMKNEANWSSFSVTSIPNCGEGCVWRADLIISFGVWCI** : 1153  
PvEIN2b : **MNQANAMGEARYFSSDGKTFSSMKNEANWSSNFSVTSIPNCGEGCVWRADIVISFGVWCI** : 1156  
LjEIN2b : **MNRVSHMGEARVYFSSDGKSGSSMKNEELNCSSFSVSSIPHCGEGCVWRADLIISFGVWCI** : 1097  
MdEIN2 : **INRTGQMGEPQYHSSDRKPSAMK-NND-LSQFMFSSVPHCGEGCIWKADLVVSGVWCI** : 1147  
PpEIN2 : **MNRTVHMGEPPYHPSDRKSVSALK-NND-ANCTSF-MVPTCGEGCIWRSDLIVSFGVWCI** : 1153  
FvEIN2 : **INRTVHMGESPPYPSDRKSASAKM-NDVNLTHLMVSSVPNCGEGCIWRSDLIVSFGVWCI** : 1102  
CsEIN2 : **MGRVVRMKEPSPFSPDRRPGSGMK-NDTNFNSVSISSVPHCGEGCIWRSDLIVSFGVWCI** : 1136  
AtEIN2 : **INQVGHMGEPE-----LISSVPNCGEGCVWRADLIISFGVWCI** : 1142

\* 1280 \* 1300 \* 1320  
MtEIN2 : **HRILDLSLLESRPPELWGKYTYVLNRLO-----GIIEPAFSKPRTPS** : 1197  
PsEIN2 : **HRVLDLSVLESRPPELWGKYTYVLNRLO-----GIIDPAFKKPRTPS** : 1199  
CaEIN2 : **HRILDLSVLESRPPELWGKYTYVLNRLO-----GIIEPAFSKPRTPS** : 1241  
LjEIN2a : **HRILDLSLMESRPPELWGKYTYVLNRLO-----GIIDPAFSKPRSPS** : 1205  
GmEIN2a : **HSILNLSLTVESRPPELWGKYTYVLNRLO-----GIIDPAFLKPRSPS** : 1179  
PvEIN2a : **HSILNLTLVESRPPELWGKYTYVLNRLO-----GIIDPAFFKPRSPS** : 1183  
GmEIN2b1 : **KRVLDLSLMESRPPELWGKYTYVLNRLO-----GIIDLAFSKPRSPM** : 1203  
GmEIN2b2 : **KRVLDLSLMESRPPELWGKYTYVLNRLO-----GIIDLAFSKPRSPM** : 1194  
PvEIN2b : **HRVLDLSLMESRPPELWGKYTYVLNRLO-----GIIDLAFSKPRCPM** : 1197

LjEIN2b : HRVLDLSLMESRPELWGKYTYVLRNRLQ-----GVIDLAFSKPRSPM : 1138  
 MdEIN2 : HRILDLSLMESRPELWGKYTYVLRNRLQEFVSLHCTCALYTSRLTSNGIIDSFAFSKPRSPM : 1207  
 PpEIN2 : HRILDLSLMESRPELWGKYTYVLRNRLQ-----GIIDSFAFSKPRTPM : 1194  
 FvEIN2 : HRILDLSLMESRPELWGKYTYVLRNRLQ-----GIIDAAFSKPRTPM : 1143  
 CsEIN2 : HRILDLSLMESRPELWGKYTYVLRNRLQ-----GIIDPAFSKPRIPM : 1177  
 AtEIN2 : HRVLDLSLMESRPELWGKYTYVLRNRLQ-----GVIDPAFSKLRTPM : 1183

\* 1340 \* 1360 \* 1380  
 MtEIN2 : A~~FC~~F~~C~~L~~O~~V~~P~~T~~T~~H~~Q~~-K~~S~~S~~P~~P~~L~~S~~N~~G~~M~~L~~P~~P-T~~V~~K~~P~~G~~R~~G~~K~~Y~~T~~T~~A~~S~~S~~L~~L~~E~~L~~I~~K~~D~~V~~E~~I~~A~~I~~S~~S~~R~~K~~G : 1255  
 PsEIN2 : A~~FC~~F~~C~~L~~O~~V~~P~~T~~T~~H~~L~~O-K~~A~~S~~P~~P~~L~~S~~N~~G~~M~~L~~P~~P-T~~V~~K~~A~~G~~R~~G~~K~~C~~T~~T~~P~~S~~M~~F~~F~~E~~L~~T~~K~~D~~V~~E~~I~~A~~I~~S~~S~~R~~K~~G : 1257  
 CaEIN2 : A~~FC~~F~~C~~L~~O~~V~~S~~T~~T~~H~~Q~~-N~~S~~S~~P~~P~~L~~S~~N~~G~~M~~L~~P~~P-I~~V~~K~~P~~G~~R~~G~~K~~N~~T~~T~~A~~S~~T~~L~~L~~E~~L~~I~~K~~D~~V~~E~~I~~A~~I~~S~~S~~R~~K~~G : 1299  
 LjEIN2a : S~~P~~C~~F~~C~~L~~O~~V~~P~~T~~T~~T~~Y~~L~~Q~~Q~~K~~S~~S~~P~~H~~L~~S---L~~P~~P-T~~A~~K~~P~~G~~R~~G~~K~~C~~T~~T~~P~~S~~T~~L~~L~~E~~L~~I~~K~~D~~V~~E~~V~~A~~I~~S~~S~~R~~K~~G : 1261  
 GmEIN2a : A~~FC~~F~~C~~L~~O~~V-----Q~~Q~~K~~L~~S~~P~~H~~L~~S~~N~~G~~I~~L~~P~~P~~T~~T~~T~~K~~P~~Q~~Q~~G~~K~~C~~T~~T~~A~~S~~T~~L~~L~~E~~L~~I~~K~~E~~V~~E~~L~~A~~I~~S~~G~~R~~K~~G : 1234  
 PvEIN2a : A~~FC~~F~~C~~L~~O~~V~~L~~T-A~~H~~O~~R~~K~~L~~N~~P~~H~~L~~S~~N~~E~~M~~I~~L~~P-T~~A~~K~~P~~G~~R~~G~~K~~C~~T~~T~~A~~S~~G~~L~~L~~E~~L~~I~~K~~D~~V~~E~~L~~A~~I~~S~~C~~R~~K~~G : 1241  
 GmEIN2b1 : T~~P~~C~~F~~C~~L~~O~~V~~P~~M~~T~~Y~~-Q~~Q~~K~~S~~G~~S~~P~~P~~S~~N~~G~~M~~L~~P~~P-A~~S~~K~~P~~G~~R~~G~~K~~C~~T~~T~~A~~S~~V~~V~~F~~E~~M~~V~~K~~D~~V~~E~~I~~A~~I~~S~~S~~R~~K~~G : 1261  
 GmEIN2b2 : T~~P~~C~~F~~C~~L~~O~~V~~P~~M~~T~~Y~~-Q~~Q~~K~~S~~S~~P~~P~~S~~S~~N~~G~~M~~L~~P~~P-A~~S~~K~~P~~G~~R~~G~~K~~C~~T~~T~~A~~S~~V~~V~~F~~E~~M~~V~~K~~D~~V~~E~~I~~A~~I~~S~~S~~R~~K~~G : 1252  
 PvEIN2b : T~~A~~C~~F~~C~~L~~O~~V~~P~~M~~T~~Y~~-Q~~I~~K~~S~~S~~P~~P~~S~~S~~N~~G~~M~~L~~P~~P-A~~S~~K~~P~~G~~R~~G~~K~~C~~T~~T~~A~~S~~V~~V~~F~~E~~M~~V~~K~~D~~V~~E~~I~~A~~I~~S~~S~~R~~K~~G : 1255  
 LjEIN2b : A~~FC~~F~~C~~L~~O~~V~~P~~M~~V~~H-Q~~Q~~R-L~~S~~P~~P~~S~~N~~G~~M~~L~~P~~P-A~~A~~K~~P~~G~~R~~G~~K~~C~~T~~T~~A~~L~~V~~V~~L~~D~~M~~V~~K~~D~~V~~E~~I~~A~~I~~S~~S~~R~~K~~G : 1195  
 MdEIN2 : S~~P~~C~~F~~C~~L~~K~~V~~P~~A~~A~~H~~-Q~~L~~K~~S~~S~~L~~S~~F~~S~~N~~G-I~~P~~P-A~~A~~K~~P~~A~~R~~G~~K~~S~~T~~T~~A~~V~~T~~L~~L~~D~~I~~I~~K~~D~~V~~E~~I~~A~~I~~S~~C~~R~~K~~G : 1264  
 PpEIN2 : S~~P~~C~~F~~C~~L~~O~~I~~S~~A~~V~~H~~-Q~~L~~K~~S~~S~~P~~S~~F~~S~~N~~G-I~~P~~P-A~~A~~K~~P~~A~~R~~G~~K~~C~~T~~T~~A~~V~~T~~L~~L~~D~~I~~I~~K~~D~~V~~E~~I~~A~~I~~S~~C~~R~~K~~G : 1251  
 FvEIN2 : S~~P~~C~~F~~C~~L~~O~~I~~A~~A~~A~~Q~~-Q~~Q~~K~~S~~S~~P~~T~~F~~S~~N~~G~~M~~L~~P~~P-A~~A~~K~~P~~A~~R~~G~~K~~C~~T~~T~~A~~V~~T~~L~~L~~D~~I~~I~~K~~D~~V~~E~~I~~A~~I~~S~~C~~R~~K~~G : 1201  
 CsEIN2 : P~~P~~C~~F~~C~~L~~O~~I~~P~~Q~~A~~F~~-Q~~Q~~R~~S~~S~~P~~Q~~I~~A~~N~~G~~M~~L~~P~~P-A~~A~~K~~P~~G~~K~~G~~K~~C~~T~~T~~A~~A~~M~~L~~L~~D~~M~~V~~K~~D~~V~~E~~I~~A~~I~~S~~C~~R~~K~~G : 1235  
 AtEIN2 : T~~P~~C~~F~~C~~L~~O~~I~~P~~A~~S~~H~~--Q~~R~~A~~S~~P~~T~~S~~A~~N~~G~~M~~L~~P~~P~~-A~~A~~K~~P~~A~~K~~G~~K~~C~~T~~T~~A~~V~~T~~L~~L~~D~~L~~I~~K~~D~~V~~E~~M~~A~~I~~S~~C~~R~~K~~G : 1240

\* 1400 \* 1420 \*  
 MtEIN2 : R~~T~~G~~T~~A~~A~~G~~E~~V~~A~~F~~P~~K~~G~~K~~E~~N~~L~~A~~S~~V~~L~~K~~R~~Y~~K~~R~~R~~L~~S~~S~~N~~K~~L~~V~~G~~N~~Q~~E~~G~~T~~S~~S~~R~~K~~I~~P~~S~~S~~G~~P~~Y~~N~~Q~~\*- : 1309  
 PsEIN2 : R~~T~~G~~T~~A~~A~~G~~D~~V~~A~~F~~P~~K~~G~~K~~E~~N~~M~~A~~S~~V~~L~~K~~R~~Y~~K~~R~~R~~L~~S~~S~~S~~K~~L~~F~~A~~N~~Q~~-----G~~K~~I~~P~~S~~S~~G~~A~~H~~T~~Q-- : 1306  
 CaEIN2 : R~~T~~G~~T~~A~~A~~G~~D~~V~~A~~F~~P~~K~~G~~K~~E~~N~~L~~A~~S~~V~~L~~K~~R~~Y~~K~~R~~R~~L~~S~~S~~N~~K~~L~~V~~G~~N~~Q~~E~~G~~T~~G~~S~~R~~K~~I~~P~~S~~T~~G~~S~~Y~~N~~Q~~-- : 1353  
 LjEIN2a : R~~T~~G~~T~~A~~A~~G~~D~~V~~A~~F~~P~~K~~G~~K~~E~~N~~L~~A~~S~~V~~L~~K~~R~~Y~~K~~R~~R~~L~~S~~S~~I~~N~~K~~P~~A~~G~~E~~-G~~S~~G~~L~~R~~K~~M~~T~~S~~A~~S~~S~~Y~~S~~--- : 1313  
 GmEIN2a : R~~T~~G~~T~~A~~A~~G~~D~~V~~A~~F~~P~~K~~G~~K~~E~~N~~L~~A~~S~~V~~L~~K~~R~~Y~~K~~R~~R~~L~~S~~-N~~K~~P~~V~~G~~T~~N~~G~~G~~T~~G~~S~~R~~K~~I~~P~~T~~L~~A~~P~~Y~~N~~Q\*- : 1287  
 PvEIN2a : R~~T~~G~~T~~V~~A~~G~~D~~V~~A~~F~~P~~K~~G~~K~~E~~N~~L~~A~~S~~V~~L~~K~~R~~Y~~K~~R~~R~~L~~S~~-N~~K~~P~~A~~G~~T~~N~~E~~G~~T~~G~~S~~R~~K~~T~~P~~R\*----- : 1288  
 GmEIN2b1 : R~~T~~G~~T~~A~~A~~G~~D~~V~~A~~F~~P~~K~~G~~K~~E~~N~~L~~A~~S~~V~~L~~K~~R~~Y~~K~~R~~R~~L~~S~~N~~K~~P~~V~~G~~T~~T~~Q~~E~~G~~--I~~R~~K~~I~~P~~T~~S~~A~~P~~Y~~N~~L~~\*- : 1313  
 GmEIN2b2 : R~~T~~G~~T~~A~~A~~G~~D~~V~~A~~F~~P~~K~~G~~K~~E~~N~~L~~A~~S~~V~~L~~K~~R~~Y~~K~~R~~R~~L~~S~~N~~K~~P~~V~~G~~T~~T~~Q~~E~~G~~--I~~R~~K~~I~~Y~~L~~\*----- : 1298  
 PvEIN2b : R~~T~~G~~T~~A~~A~~G~~D~~V~~A~~F~~P~~K~~G~~K~~E~~N~~L~~A~~S~~V~~L~~K~~R~~Y~~K~~R~~R~~L~~S~~N~~K~~P~~V~~G-T~~Q~~E~~G~~--I~~R~~K~~I~~P~~T~~S~~A~~P~~Y~~N~~S~~\*- : 1306  
 LjEIN2b : R~~T~~G~~T~~A~~A~~G~~D~~V~~A~~F~~P~~K~~G~~K~~E~~N~~M~~A~~S~~V~~L~~K~~R~~Y~~K~~R~~R~~L~~P~~N~~K~~P~~V~~G-T~~H~~E~~G~~--T~~R~~K~~I~~P~~T~~S~~A~~P~~Y~~N~~L~~-- : 1246  
 MdEIN2 : R~~T~~G~~T~~A~~A~~G~~D~~V~~A~~F~~P~~K~~G~~K~~E~~N~~L~~A~~S~~V~~L~~K~~R~~Y~~K~~R~~R~~L~~S~~N~~K~~A~~V~~G~~T~~H~~E~~G~~P~~-G~~S~~R~~K~~-S~~L~~T~~S~~A~~P~~Y~~G~~-- : 1316  
 PpEIN2 : R~~T~~G~~T~~A~~A~~G~~D~~V~~A~~F~~P~~K~~G~~K~~E~~N~~L~~A~~S~~V~~L~~K~~R~~Y~~K~~R~~R~~L~~I~~N~~K~~T~~A~~G~~A~~H~~E~~G~~P~~-G~~S~~R~~K~~-V~~Q~~T~~S~~A~~P~~Y~~G~~S\* : 1304  
 FvEIN2 : R~~T~~G~~T~~A~~A~~G~~D~~V~~A~~F~~P~~K~~G~~K~~E~~N~~L~~A~~S~~V~~L~~K~~R~~Y~~K~~R~~R~~L~~S~~N~~K~~P~~V~~G~~T~~N~~E~~G~~P~~S~~G~~S~~R~~K~~G~~T~~A~~T~~S~~A~~P~~Y~~A~~S\* : 1256  
 CsEIN2 : R~~T~~G~~T~~A~~A~~G~~D~~V~~A~~F~~P~~K~~G~~K~~E~~N~~L~~A~~S~~V~~L~~K~~R~~Y~~K~~R~~R~~L~~S~~N~~K~~P~~V~~A~~T~~H~~E~~V~~S~~S~~I~~S~~R~~K~~I~~S~~A~~T~~S~~V~~P~~Y~~S~~\* : 1290  
 AtEIN2 : R~~T~~G~~T~~A~~A~~G~~D~~V~~A~~F~~P~~K~~G~~K~~E~~N~~L~~A~~S~~V~~L~~K~~R~~Y~~K~~R~~R~~L~~S~~N~~K~~P~~V~~G~~M~~N~~Q~~D~~G~~P~~G~~S~~R~~K~~N~~V~~T~~A~~Y~~G~~S~~L~~G~~-- : 1294



**Supplemental Figure S4. Interaction of *lip1* and *ein2* mutations**

Plants were grown for 16 days from sowing under natural daylight in the glasshouse. The *ein2 lip1* double mutant shoot did not emerge through the soil surface during this time.