

auxin efflux carrier (AEC) domain

GhPIN6-A MITGGEFFYKVMCAVPLVYFAMIIAYGVSVKWRIFFSPEQCSGINRFVAVFAVPVLSFHFFIA 60  
GhPIN6-D MITGGEFFYKVMCAVPLVYFAMIIAYGVSVKWRIFFSPEQCSGINRFVAVFAVPVLSFHFFIA 60  
GhPIN1-3-A MITLLIDFYHVMTAMVPLVYVAMILAYGVSVKWKKIFSPGQCSGINRFVALFAVPLLSFHFFIA 60  
GhPIN1-3-D MITLLIDFYHVMTAMVPLVYVAMILAYGVSVKWKKIFSPGQCSGINRFVALFAVPLLSFHFFIA 60  
GhPIN1-1-D MITLLIDFYHVMTAMVPLVYVAMILAYGVSVKWKKIFTPDQCSGINRFVALFAVPLLSFHFFIA 60  
GhPIN1-2-D MITLLIDFYHVMTAMVPLVYVAMILAYGVSVKWKKIFTPDQCSGINRFVALFAVPLLSFHFFIA 60  
GhPIN1-4-D MISATDLYHVLTAIVPLVYVAMILAYGVSVKWKKIFTPDQCSGINRFVALFAVPLLSFHFFIS 60  
GhPIN1-4-A MISWINDLYTVLTAIVPLVYVAMILAYGVSRRWKKIFTPDQCSGINRFVALFAVPLLSFHFFIS 60  
GhPIN3-D MISWINDLYTVLTAIVPLVYVAMILAYGVSRRWKKIFTPDQCSGINRFVALFAVPLLSFHFFIS 60  
GhPIN2-A MITGKDIYDVLAIVPLVYVAMILAYGVSRRWKKIFTPDQCSGINRFVAVFAVPLLSFHFFIS 60  
GhPIN2-D MITGKDIYDVLAIVPLVYVAMILAYGVSRRWKKIFTPDQCSGINRFVAVFAVPLLSFHFFIS 60  
GhPIN8-1-A MISLADGVYHVIATAVPLVYFAMILAYVSVKWKKIFTEPQACAGINKFVAKFSIPLLSFQVVIS 60  
GhPIN8-1-D MISLADGVYHVIATAVPLVYFAMILAYVSVKWKKIFTEPQACAGINKFVAKFSIPLLSFQVVIS 60  
GhPIN8-2-D ----- 0  
GhPIN9-A MGIKILLYSVLTAIVVPLVYVTEFLAYGVSVKWKKVFTPEQACAGINRFVALFAVPLLSSEFFIS 60  
GhPIN3-A ----- 0  
GhPIN8-2-A --MSFTLTHRLCLSPFQRTHTKPHSTSKPTVSSPSKLSYLPVSSLSHNSHLSVTVQ 58

GhPIN6-A SNNPYQMDTKFFIADTVSKVLVLAIVSVVAIFFPFGGSLDWLITLFSLATLPLNTLVMGIPIL 120  
GhPIN6-D SNNPYQMDTKFFIADTVSKVLVLAIVSVVAIFFPFGGSLDWLITLFSLATLPLNTLVMGIPIL 120  
GhPIN1-3-A SNDPYAMNFRFIAADTLQKVMVLGILAVVSKVSKRGCLEWTTITLFSLSTLPLNTLVMGIPIL 120  
GhPIN1-3-D SNDPYAMNFRFIAADTLQKVMVLGILAVVSKVSKRGCLEWTTITLFSLSTLPLNTLVMGIPIL 120  
GhPIN1-1-D SNNPYAMNFRFIAADTLQKILVIVLVAIWSKVSKRGCLEWTTITLFSLSTLPLNTLVMGIPIL 120  
GhPIN1-2-D SNDPYAMNFRFIAADTLQKILVIVLVAIWSKVSKRGCLEWTTITLFSLSTLPLNTLVMGIPIL 120  
GhPIN1-4-D TNNPYAMNFRFIAADTLQKILVIVLVAIWSRTSSRGSLEWSTITLFSLSTLPLNTLVMGIPIL 120  
GhPIN1-4-A TNDPYAMNFRFIAADTLQKILVIVLVAIWSRTSSRGSLEWSTITLFSLSTLPLNTLVMGIPIL 120  
GhPIN3-D TNDPYAMNFRFIAADTLQKILVIVLVAIWSRTSSRGSLEWSTITLFSLSTLPLNTLVMGIPIL 120  
GhPIN2-A SNDPYAMNFRFIAADSLQKVVILVALFLWQAFTHKCNLEWMTITLFSLSTLPLNTLVMGIPIL 120  
GhPIN2-D SNDPYAMNFRFIAADSLQKVVILVALFLWQAFTHKCNLEWMTITLFSLSTLPLNTLVMGIPIL 120  
GhPIN8-1-A ENNPYKMNLLIILADFLQKLLAFVLFALIKLSSRGGSSITIGLSLSTMPNTLILGIPIL 120  
GhPIN8-1-D ENNPYKMNLLIILADFLQKLLAFVLFALIKLSSRGGSSITIGLSLSTMPNTLILGIPIL 120  
GhPIN8-2-D -----MNIKLVILADFLQKVFVAVVLIIVGQLRSRGGESSITIGLSLSTLPLNTLILGIPIL 54  
GhPIN9-A RINPYKMDLLFLAAGGVSKVLILFALLCWANFTKRGGLDWSITVFSLSTLPLNTLVMGIPIL 120  
GhPIN3-A -----MLSTAASLYPLVYVTEGGIVACFKPSAFAWFVERGPPSSYSFSLGLIMLAMGLITL 53  
GhPIN8-2-A AKPRINENMLSTAASLYPLVYVTEGGIVACFKPSAFAWFVERGPPSSYSFSLGLIMLAMGLITL 118

GhPIN6-A LNAMYGDFTEQSLMVQIVVVLQCIWYTLVLLFLFEYRAATLLIKTOFFPGFTAATISKFELDN 180  
GhPIN6-D LNAMYGDFTEQSLMVQIVVVLQCIWYTLVLLFLFEYRAATLLIKTOFFPGFTAATISKFELDN 180  
GhPIN1-3-A LKGMGYEFGSGLMVQIVVVLQCIWYTLVLLFLFEYRAAKLLISQFP-DTAGSIVSIHVDS 179  
GhPIN1-3-D LKGMGYEFGSGLMVQIVVVLQCIWYTLVLLFLFEYRAAKLLISQFP-DTAGSIVSIHVDS 179  
GhPIN1-1-D LKGMGYEFGSGLMVQIVVVLQCIWYTLVLLFLFEYRAAKLLISQFP-DTAGSIVSIHVDS 179  
GhPIN1-2-D LKGMGYEFGSGLMVQIVVVLQCIWYTLVLLFLFEYRAAKLLISQFP-DTAGSIVSIHVDS 179  
GhPIN1-4-D LKGMGYDYSGLMVQIVVVLQCIWYTLVLLFLFEYRAKLLISQFP-DTAGSIVSIHVDS 179  
GhPIN1-4-A LNAMYGDFTEQSLMVQIVVVLQCIWYTLVLLFLFEYRAKLLISQFP-DTAGSIVSIHVDS 179  
GhPIN3-D LNAMYGDFTEQSLMVQIVVVLQCIWYTLVLLFLFEYRAKLLISQFP-DTAGSIVSIHVDS 179  
GhPIN2-A LKAMYGDFTEQSLMVQIVVVLQCIWYTLVLLFLFEYRAKLLISQFP-DTAGSIVSIHVDS 179  
GhPIN2-D LKAMYGDFTEQSLMVQIVVVLQCIWYTLVLLFLFEYRAKLLISQFP-DTAGSIVSIHVDS 179  
GhPIN8-1-A LRAMYGDKSATLTAQIVVVLQCIWYTLVLLFLFEYRAKLLISQFP-DTAGSIVSIHVDS 161  
GhPIN8-1-D LRAMYGDKSATLTAQIVVVLQCIWYTLVLLFLFEYRAKLLISQFP-DTAGSIVSIHVDS 161  
GhPIN8-2-D LKAMYGDEPAQLTAQIVVVLQCIWYTLVLLFLFEYRAKLLISQFP-DTAGSIVSIHVDS 95  
GhPIN9-A LKSMYGDKEYLMTQVIVVVLQCIWYTLVLLFLFEYRAKLLISQFP-DTAGSIVSIHVDS 179  
GhPIN3-A ELKDLLNLFTRPSTLIFGCVAQYTTMPTFAMISKTLGLSPSLSVGLLILGCCPGGAAS 113  
GhPIN8-2-A ELKDLLNLFTRPSTLIFGCVAQYTTMPTFAMISKTLGLSPSLSVGLLILGCCPGGAAS 178

GhPIN6-A DVISLDGRDPLRTHSETDINGRIRVRRRSTSSAP-----ESALSSSICLTPRASNLN 234  
GhPIN6-D DVISLDGRDPLRTHSETDINGRIRVRRRSTSSAP-----ESALSSSICLTPRASNLN 234  
GhPIN1-3-A DIMSLDGRDPLETEAEIKEDGKLVTVRKSNASRSDIFSRSSQGLSS---TTPRPSNLTN 236  
GhPIN1-3-D DIMSLDGRDPLETEAEIKEDGKLVTVRKSNASRSDIFSRSSQGLSS---TTPRPSNLTN 236  
GhPIN1-1-D DIMSLDGRDPLETEAEIKEDGKLVTVRKSNASRSDIFSRSSQGLSS---TTPRPSNLTN 236  
GhPIN1-2-D DVVSLDGRDPLETEAEIKEDGKLVTVRKSNASRSDIFSRSSQGLSS---TTPRPSNLTN 236  
GhPIN1-4-D DVVSLDGRDPLETEAEIKEDGKLVTVRKSNASRSDIFSRSSQGLSS---TTPRPSNLTN 239  
GhPIN1-4-A DVVSLDGRDPLETEAEIKEDGKLVTVRKSNASRSDIFSRSSQGLSS---TTPRPSNLTN 233  
GhPIN3-D DVVSLDGRDPLETEAEIKEDGKLVTVRKSNASRSDIFSRSSQGLSS---TTPRPSNLTN 233  
GhPIN2-A DVVSLNGRDPLETEAEIKEDGKLVTVRKSNASRSDIFSRSSQGLSS---TTPRPSNLTN 239  
GhPIN2-D DVVSLNGRDPLETEAEIKEDGKLVTVRKSNASRSDIFSRSSQGLSS---TTPRPSNLTN 239  
GhPIN8-1-A ETTVAVSQASGGEAPEEAQGRGGGEETQTRARRS----- 198  
GhPIN8-1-D ETTVAVSQASGGEAPEEAQGRGGGEETQTRARRS----- 192  
GhPIN8-2-D ETTVAVSQASGGEAPEEAQGRGGGEETQTRARRS----- 125  
GhPIN9-A EVINVIATSSNQOQQOQTQANANKIAPDQSQFRPMVAASMEGEDGTSTTCEKQSVQA 239  
GhPIN3-A TVVTFIARGDVSLSVTVCTTLAGVILTPLLMVLAVL-----TYVVIDAIG 160  
GhPIN8-2-A TVVTFIARGDVSLSVTVCTTLAGVILTPLLMVLAVL-----TYVVIDAIG 225

GhPIN6-A	AETFSVNTPPGGENNNEIVFCNGELMGFGYRAVSPR-----LSGYASSDAYSLQPT	283
GhPIN6-D	AETFSVNTPPGGENNNEIVFCNGELMGFGYRAVSPR-----LSGYASSDAYSLQPT	283
GhPIN1-3-A	AETYSLQSSRNPTPRGSSFNHTDFYSMMAGG----RNSNF----GAADVYGLSASRGPT	287
GhPIN1-3-D	AETYSLQSSRNPTPRGSSFNHTDFYSMMAGG----RNSNF----GAADVYGLSASRGPT	287
GhPIN1-1-D	AETYSLQSSRNPTPRGSSFNHTDFYSMMAGG----RNSNF----GSADVYGLSASRGPT	287
GhPIN1-2-D	AETYSLQSSRNPTPRGSSFNHTDFYSMMAGG----RNSNF----GSADVYGLSASRGPT	287
GhPIN1-4-D	AETYSLQSSRNPTPRGSSFNHTDFYSMMVNGG----KNNVS----PRQSNYGLGFDEENG	290
GhPIN1-4-A	AETYSLSSRNPTPRGSSFNNSDFYSMMGVQGFPARHSNF----GPADLYSVQSSRGPT	288
GhPIN3-D	AETYSLSSRNPTPRGSSFNNSDFYSMMGVQGFPARHSNF----GPADLYSVQSSRGPT	288
GhPIN2-A	VETYSVQSSREPTPRASSFNQNDFYAMFASKAPSPKHGYTNSFQGAVGDVHSLQSSKGA	299
GhPIN2-D	VETYSVQSSREPTPRASSFNQNDFYAMFASKAPSPNHGYNNSFQGAVGDVHSLQSSKGA	299
GhPIN8-1-A	-----	196
GhPIN8-1-D	-----	192
GhPIN8-2-D	-----	125
GhPIN9-A	QREESSSTAKGVESVKQENVENASIPSSFS-----	270
GhPIN3-A	LSLSHLLQVVVAEVLIG-----	176
GhPIN8-2-A	LSLSHLLQVVVAEVLIG-----	241
GhPIN6-A	PRASNEN-----	290
GhPIN6-D	PRASNEN-----	290
GhPIN1-3-A	PRPSNYEEDGTGMGKPRFHYHAQGG-----AGAAHYPAFNPFGMFSPNGSK-----	332
GhPIN1-3-D	PRPSNYEEDGTGMGKPRFHYHAQGG-----AGAAHYPAFNPFGMFSPNGSK-----	332
GhPIN1-1-D	PRPSNYEEDGS--GKPRFHYHGQS-----GVTGHYPAPNPFGMFSPTGSK-----	329
GhPIN1-2-D	PRPSNYEEDGAAAGKPRFHYQAPGGGG---GGGGATHYPVFNPGMFSPTGSKPLGGGNA-	343
GhPIN1-4-D	VGMFGNNGIRS-----NGSSYPAPTSAGLFSPVTAP-----	321
GhPIN1-4-A	PRPSNTEENNTVMSPRFGFYPAQTVP-----SSYPAPNPEFSSVTKNAKATQQQQ-	338
GhPIN3-D	PRPSNTEENNTVMSPRFGFYPAQTVP-----SSYPAPNPEFSSVTKNAKATQQQQ--	337
GhPIN2-A	PRPSNTEDEMLKVAKRRGRSMSGELYNGGGGGVPSYPPNPFIAGSTSGGSKKKEGSGS	359
GhPIN2-D	PRPSNTEDEMLKVAKRRGRSMSGELYNGGGGGVPSYPPNPFIAGSTSGGSKKKEGSGS	359
GhPIN8-1-A	-----	196
GhPIN8-1-D	-----	192
GhPIN8-2-D	-----	125
GhPIN9-A	-----	270
GhPIN3-A	-----	176
GhPIN8-2-A	-----	241
GhPIN6-A	-----EMDVIITTAAGNTPITWM	306
GhPIN6-D	-----EMDVIITTAAGNTPITWM	306
GhPIN1-3-A	-----ANTKKPNDQAQQAEDGGRDLHMFVWS	359
GhPIN1-3-D	-----ANTKKPNDQAQQAEDGGRDLHMFVWS	359
GhPIN1-1-D	-----GVKKPNGQAHQKVEDGGGKDLHMFVWS	356
GhPIN1-2-D	-----N--ANAKRPNHGHPQKSEDDGGRDLHMFVWS	371
GhPIN1-4-D	-----KKANGGGDGGGKDLHMFVWS	341
GhPIN1-4-A	-----QQPVPQQQPKEKENNKENHDAKDLHMFVWS	369
GhPIN3-D	-----QQQPREKENNKENHDAKDLHMFVWS	362
GhPIN2-A	MPNKKELHMGGRSMSGELYNGGGVPSYPPNPFIAGSTSGGSKKKEIGAMPNKDLHMFVWS	419
GhPIN2-D	MPNK-----DLHMFVWS	371
GhPIN8-1-A	-----	196
GhPIN8-1-D	-----	192
GhPIN8-2-D	-----	125
GhPIN9-A	-----	270
GhPIN3-A	-----	176
GhPIN8-2-A	-----	241
GhPIN6-A	RSPVAGGKVFRRQSP-----VVPPTKMVWDCQDGGDDNRQGFKDLGE	349
GhPIN6-D	RSPVAGGKVFRRQSP-----VVPPTKMVWDCQDGGDDNRQGFKDLGE	349
GhPIN1-3-A	SSASPVSDFVFGGGG-----HEYGANEQKEVRVAVSPGKAEGHRENNEEYMER	407
GhPIN1-3-D	SSASPVSDFVFGGGG-----HEYGANEQKEVRVAVSPGKAEGHRRNNEEYMER	407
GhPIN1-1-D	SSASPVSDFVFGG-----YEGVTDQKEVRVAVSPGKVEGHGHDNQEEMER	402
GhPIN1-2-D	SSASPVSDFVGGTG-----HDYGAADQKDVRVAVSPGKVEGHRENREEYMER	418
GhPIN1-4-D	SSASPVS-----EGGIHVFKGGDYGNDHHHKDYDEYGR	374
GhPIN1-4-A	SSASPVEGGGLHVFGGTDGFGASEQSGRSEQGAKEIRMLVADHPQNGENKGMTGSGDVNG	429
GhPIN3-D	SSASPVEGGGLHVFGGTDGFGASEQSGRSEQGAKEIRMLVADHPQNGENKGMAGSGDVHG	422
GhPIN2-A	SSASPVEGNLRHAVN-----RAASTDFDSSKPTHQQENAASRAMHELINM	466
GhPIN2-D	SSASPVEGNLRHAVN-----RAASTDFDSSKPTYQQENAASKAMHELINM	418
GhPIN8-1-A	-----	196
GhPIN8-1-D	-----	192
GhPIN8-2-D	-----	125
GhPIN9-A	-----	270
GhPIN3-A	-----	176
GhPIN8-2-A	-----	241

GhPIN6-A	K E T S F R D N ----- T K I T V A E M N G D G K E E V G S K ----- Q B M P K A I V M V R L I L	391
GhPIN6-D	K E T S F R D N ----- T K I T V A E M N G D G K E E V G S K ----- Q B M P K A I V M V R L I L	391
GhPIN1-3-A	E D F S F G N R ----- G L E R E M T N N H E G D K V S D G K P ----- K T M P P A S V I T R L I L	449
GhPIN1-3-D	E D F S F G N R ----- G L E R E M T N N H E G D K V S D G K P ----- K T M P P A S V I T R L I L	449
GhPIN1-1-D	D E F S F G N R R E M ----- N N V Q E S E N N K V G E A I A I A N P ----- K T M P P T S V M T R L I L	448
GhPIN1-2-D	E D F S F A K G ----- G M N G E M N K H E G D K V G D S N G K P ----- N T M P P T S V M T R L I L	461
GhPIN1-4-D	D E F T F G N K A A T N G G A D R E G P V L S K L G S S S T T E L N P K I E T K P ----- A A M P P A S V M T R L I L	329
GhPIN1-4-A	E D F S F A G R D G E E E R E K E G P N G L N K L G S S S T A E L H P K A G G P E S G V G K M P P A S V M T R L I L	489
GhPIN3-D	E D F S F A G R D G E E E R E K E G P N G L N K L G S S S T A E L H P K A G G P E S G V G K M P P A S V M T R L I L	582
GhPIN2-A	G K S S G G D K D L E I L E E G S K F P T G G S P L S C Q K K L N M E E E V A K K ----- Q Q M P P A S V M T R L I L	522
GhPIN2-D	G K S S G G D K D L E I L E E G S K F P T G G S P L S C Q K K L N M E E E V A K K ----- Q Q M P P A S V M T R L I L	474
GhPIN8-1-A	----- K T M L T F	202
GhPIN8-1-D	----- K T M L T F	198
GhPIN8-2-D	----- K I M L T F	131
GhPIN9-A	----- P S M L L K T F	278
GhPIN3-A	----- S Y L Q S T F	183
GhPIN8-2-A	----- S Y L Q S T F	248

membrane transport (MT) domain

GhPIN6-A	I V V G R K L S R N P N T Y S S I L G L W S L I S F R W N - V G M P S L V K Y S I R I I S D A G L G M A M F S L G --	448
GhPIN6-D	I V V G R K L S R N P N T Y S S I L G L W S L I S F R W N - V G M P S L V K Y S I R I I S D A G L G M A M F S L G --	448
GhPIN1-3-A	I M V W R K L I R N P N T Y S S L G L T W S L I S F R W N - V M P A I I A K S I S I L S D A G L G M A M F S L G --	506
GhPIN1-3-D	I M V W R K L I R N P N T Y S S L G L T W S L I S F R W N - V M P A I I A K S I S I L S D A G L G M A M F S L G --	506
GhPIN1-1-D	I M V W R K L I R N P N T Y S S L G L T W S L I S F R W N - V M P A I I A K S I S I L S D A G L G M A M F S L G --	505
GhPIN1-2-D	I M V W R K L I R N P N T Y S S L G L T W S L I S F R W N - V M P A I I A K S I S I L S D A G L G M A M F S L G --	518
GhPIN1-4-D	I M V W R K L I R N P N T Y S S L G L T W S L I S F R W N - V M P A I I A K S I S I L S N A G L G M A M F S L G --	486
GhPIN1-4-A	I M V W R K L I R N P N T Y S S L G L V W S L I A F R W H - V S M P K I I E K S I S I L S D A G L G M A M F S I V S G	548
GhPIN3-D	I M V W R K L I R N P N T Y S S L G L V W S L I A F R W H - V S M P K I I E K S I S I L S D A G L G M A M F S L G --	539
GhPIN2-A	I M V W R K L I R N P N T Y S S L G L T W S L I S F R W N - V M P T I V S G S T A I L S D A G L G M A M F S L G --	579
GhPIN2-D	I M V W R K L I R N P N T Y S S L G L T W S L I S F R W N - V M P T I V S G S T A I L S D A G L G M A M F S L G --	531
GhPIN8-1-A	I T V G K K L I A N P N T H A T L L G L I W A S I Q F R W N - I K F P A I I E K S I A I L S S G L G M A M F S L G --	259
GhPIN8-1-D	I T V G K K L I A N P N T H A T L L G L I W A S I Q F R L W N - I K F P A I I E K S I A I L S S G L G M A M F S L G --	256
GhPIN8-2-D	I T V G K K L I A N P N T H A A W L G L I W A G I R F R W E - I K F P A I I Q N S L S I L A S C ----- G L G --	181
GhPIN9-A	R K V W L K L I R N P N T Y S S L G L S W A L V S C R W D - I K K F Q I M E N S V T I L S A G L G M A M F S L G --	335
GhPIN3-A	P I V V K M I T P F A P L E A V L L S S L L A C S V E S G N V V R F N S S I G N A S L V S D A S L V S R L Q S L S G -	242
GhPIN8-2-A	P I V V K M I T P F A P L E A V L L S S L L A C S I E S G N V V R F K S S I V N A S L A S D A S L V S R L Q S L S G -	307

GhPIN6-A	----- L F M A L Q P N I I A C G T K R A T M G M V I R F L G G P V I M S T V S I A L	487
GhPIN6-D	----- L F M A L Q P N I I A C G T K R A T M G M V I R F L G G P V I M S T A S I A L	487
GhPIN1-3-A	----- L F M A L Q P N I I A C G N S V A A F A M A V R F L A G P A V M A A A S I A V	545
GhPIN1-3-D	----- L F M A L Q P N I I A C G N S V A A F A M A V R F L A G P A V M A A A S I A V	545
GhPIN1-1-D	----- L F M A L Q P N I I A C G N S V A A F A M A V R F L A G P A V M A A A S I A V	544
GhPIN1-2-D	----- L F M A L Q P N I I A C G N S V A A F A M A V R F L A G P A V M A A A S I A V	557
GhPIN1-4-D	----- L F M A L Q P N I I A C G N T I A T F A M A V R F L A G P A V M A A A S I A V	425
GhPIN1-4-A	P G S V G I G C D R R Q L G H Q L V K V G L F M A L Q P N I I A C G N S V A T F A M A V R F L A G P A V M A A A S I A V	608
GhPIN3-D	----- L F M A L Q P N I I A C G N S V A T F A M A V R F L A G P A V M A A A S I A V	578
GhPIN2-A	----- L F M A L Q P N I I A C G K S V A T F S M A V R F L A G P A V I A A T S I A I	618
GhPIN2-D	----- L F M A L Q P N I I A C G K S V A T F S M A V R F L A G P A V I A A T S I A I	570
GhPIN8-1-A	----- L F M A S R E S I I A C G I R M A T V A M I M K F I A G P A I M A A A S T I L	298
GhPIN8-1-D	----- L F M A S R E S I I A C G I R M A T V A M I M K F I A G P A I M A A A S T I L	295
GhPIN8-2-D	----- L F M A S C R S R I A C G I R M T A V A M V M K F M A G P A I A A S S A A L	220
GhPIN9-A	----- L F M A L Q P N I I A C G K K I A L G M V A R F I A G P A V M A I A S I A V	374
GhPIN3-A	----- G V G A V I L S V M L L H F T G F F V G Y I S A T I C R F R E A E R R A I S I E V	283
GhPIN8-2-A	----- D L G A V I L S V M L L H F I G F F V G Y I S A I C R F R E A E R R A I S I E V	348

GhPIN6-A	G L R G A K L E A A I V Q A A L P Q G I V P F V F A K E Y N G L H P D I L S T G -----	487
GhPIN6-D	G L R G A K L E A A I V Q A A L P Q G I V P F V F A K E Y N G L H P D I L S T G V I F G M L V S L F V T L L Y Y I L L G I	487
GhPIN1-3-A	G L R G V L L R V A I V Q A A L P Q G I V P F V F A K E Y N G L H P D I L S T A V I F G M L I A L E T T L V Y Y I L L G L	545
GhPIN1-3-D	G L R G V L L R V A I V Q A A L P Q G I V P F V F A K E Y N G L H P D I L S T A V I F G M L I A L E T T L V Y Y I V L G L	545
GhPIN1-1-D	G L R G V L L R V A I V Q A A L P Q G I V P F V F A K E Y N G L H P D I L S T A -----	544
GhPIN1-2-D	G L R G V L L R V A I V Q A A L P Q G I V P F V F A K E Y N G L H P D I L S T A V I F G M L I A L E T T L V Y Y I L L G I	557
GhPIN1-4-D	G L R G V L L R V A I V Q A A L P Q G I V P F V F A K E Y N G L H P D I L S T G V I F G M L I A L E T T L V Y Y I L L G L	425
GhPIN1-4-A	G L R G T L L R V A I V Q A A L P Q G I V P F V F A K E Y N V H E A I L S T A V I F G M L I A L E T T L V Y Y I L L G L	608
GhPIN3-D	G L R G T L L R V A I V Q A A L P Q G I V P F V F A K E Y N V H E A I L S T A V I F G M L I A L E T T L V Y Y I L L G L	578
GhPIN2-A	G L R G V L L R V A I V Q A A L P Q G I V P F V F A K E Y N G L H P D I L S T A V I F G M L I A L E T T I L Y Y V L L G L	618
GhPIN2-D	G L R G V L L R V A I V Q A A L P Q G I V P F V F A K E Y N G L H P D I L S T A V I F G M L I A L E T T I L Y Y V L L G L	570
GhPIN8-1-A	G L R G K L L R V A I V Q A A L P Q G I V P F V F A K E Y N G L H P D I L S T G V I F G M L I A L E V A L V Y Y I L L A L	298
GhPIN8-1-D	G L R G K L L R V A I V Q A A L P Q G I V P F V F A K E Y N G L H P D I L S T G V I F G M L I A L E V A L V Y Y I L L A L	295
GhPIN8-2-D	G L R A D Y -----	220
GhPIN9-A	G L R G T T L R L S I V Q A A L P Q G I V P F V F S R E Y N G L H P D G D I W N D S E S A H N N S I L H C V G Y L R S H I	434
GhPIN3-A	G M Q N S S L G V V L A T H T F T S F V V A L P P A M S A V I M N I M G S L G F F W R Q I S G S K Q E I E D Q E ---	283
GhPIN8-2-A	H S E F Y T R S L M N S S Y I A L H V F D E I S H S G W H A K F F I R S G I G N N S F H F S G S V T G R H V G S D Y	408

GhPIN6-A	-----	487
GhPIN6-D	-----	487
GhPIN1-3-A	-----	545
GhPIN1-3-D	-----	545
GhPIN1-1-D	-----	544
GhPIN1-2-D	-----	557
GhPIN1-4-D	-----	425
GhPIN1-4-A	-----	608
GhPIN3-D	-----	578
GhPIN2-A	-----	618
GhPIN2-D	-----	570
GhPIN8-1-A	-----	298
GhPIN8-1-D	-----	295
GhPIN8-2-D	-----	220
GhPIN9-A	WKDENINMRNSAALFREIQGYGQNQQQYSYVFLS	470
GhPIN3-A	-----	283
GhPIN8-2-A	EYNG-----	412

**Figure S1. Multiple sequence alignment of the deduced amino acid sequences of predicted PINs from *G. hirsutum*.**

The graphical view of the alignment was generated by BioEdit using ClustalW. Black under lines indicates the auxin efflux carrier (ACE) domain and red under lines highlight the membrane transport (MT) domain.