

Additional file 8. Alignment of angiosperm MHX proteins

The file presents the alignment of all currently identified angiosperm MHX proteins. See the legends of Additional file 5 for details of sequence alignment and color annotation.

	1	10	20	30	40	
A.thaliana	..	MASILNQTELQESSK	VLGHLRCEN	FFLFP	SENTLS	DGLRGVLYFLG
A.halleri	..	MASILNQTELQEASK	VLGHVRCEN	FFIFP	SENTLS	DGLRGVLYFLG
A.lyrata	..	MASILNQTELQEASK	VLGHVRCEN	FFIFP	SENTLS	DGLRGVLYFLG
C.clementina	..	MASIHTQAIIESIRAFN	LLHYEKCE	SYLLFR	GETSLG	DGFRFLYFLG
R.communis	..	MALETNYQSGWSRFGLLN	LLASEKCE	SYLVFR	GETGLSV	GFRTFLYFLG
M.esculenta	..	MALETQNSAGSKFGLLN	LLGREKCE	SYLLFH	GETALD	NGFRFLYFLA
P.trichocarpa	..	MASAYNQSDGGRFGDTN	IVGHEKCE	SYFLFR	GETTLG	EGFRFLYFLG
P.persica
C.papaya
S.tuberosum
S.lycopersicum
M.guttatus_1
C.sativus
G.max
M.truncatula
A.coerulea
V.vinifera
E.grandis
M.guttatus_2
O.sativa_J1
O.sativa_I1
O.sativa_J2
T.aestivum
B.distachyon
Z.mays
S.bicolor
S.italica
consensus>50

	50	60	70	80	90	100	110												
A.thaliana	LAYCFI	IGLSA	ITARFF	KSMENVV	KHSR	KVVVT	IDPIT	KAEVIT	YK	VWVNF	TAD	IS	LLAF	GTS	SFP	QIS	LA		
A.halleri	LAYCFI	IGLSA	ITARFF	KSMENVV	KHSR	KVVVA	IDPIT	KAEIIT	YK	VWVNF	TAD	IS	LLAF	GTS	SFP	QIS	LA		
A.lyrata	LAYCFI	IGLSA	ITARFF	KSMENVV	KHSR	KVVVA	IDPIT	KAEVIT	YK	VWVNF	TAD	IS	LLAF	GTS	SFP	QIS	LA		
C.clementina	LAYCFI	IGLSA	ITARFF	KSMENVV	KHSR	KVVVE	IDPV	TKAEVV	RY	EKVWNY	TA	AD	IS	LLAF	GTS	SFP	QIS	LA	
R.communis	LAYCFI	IGLSA	ITGRFF	KSMENVV	KHSR	KVVVE	IDPYS	NTEV	IRY	EKVWNY	TA	AD	IS	LLAF	GTS	SFP	QIS	LA	
M.esculenta	LAYCFI	IGLSA	ITARFF	KSMENVV	KHSR	KVVVE	IDPD	TNTEV	IRY	EKVWNY	TA	AD	IS	LLAF	GTS	SFP	QIS	LA	
P.trichocarpa	LAYCFI	IGLSA	ITARFF	KSMENVV	KHSR	KVVVE	IDPY	TNAE	IRY	EKVWNY	TA	AD	IS	LLAF	GTS	SFP	QIS	LA	
P.persica	LAYCFV	IGLSA	ITARFF	KSMENVV	KHSR	KVVVE	IDNP	TGAE	IRY	EKVWNY	TA	AD	IS	LLAF	GTS	SFP	QIS	LA	
C.papaya	LAYCFI	IGLSA	ITGRFF	KSMENVV	KHSR	KVVVE	IDPI	TNQE	ITR	EKVWNY	TA	AD	IS	LLAF	GTS	SFP	QIS	LA	
S.tuberosum	LAYCFI	IGLSA	ITARFF	KSMENVV	KHSR	KVVVE	IDPL	TNTK	IVK	EKVWNY	TA	AD	IS	LLAF	GTS	SFP	QIS	LA	
S.lycopersicum	LAYCFI	IGLSA	ITARFF	KSMENVV	KHSR	KVVVE	IDPL	TNTK	IVK	EKVWNY	TA	AD	IS	LLAF	GTS	SFP	QIS	LA	
M.guttatus_1	LAYCFI	IGLSA	ITSRFF	KSMENVV	KHSR	KVVVE	IDPC	TNTKT	IVR	EKVWNY	TA	AD	IS	LLAF	GTS	SFP	QIS	LA	
C.sativus	LAYCFV	IGLSA	ITARFF	KSMENVV	KHSR	KVVVE	IDPH	TNTE	IRY	EKVWNY	TA	AD	IS	LLAF	GTS	SFP	QIS	LA	
G.max	LAYCFI	IGLSA	ITARFF	KSMENVV	KHSR	KVVVE	IDPV	TKTET	IRH	EKVWNY	TA	AD	IS	LLAF	GTS	SFP	QIS	LA	
M.truncatula	LAYCFI	IGLSA	ITSRFF	KSMENVV	KHSR	KVVVE	IDPV	TKAE	TI	RH	EKVWNY	TA	AD	IS	LLAF	GTS	SFP	QIS	LA
A.coerulea	LAYCFI	IGLSA	ITARFF	KSMENVV	KHSR	KVVVE	IDHN	TNTE	EVIR	H	EKVWNY	TA	AD	IS	LLAF	GTS	SFP	QIS	LA
V.vinifera	LAYCFI	IGLSA	ITARFF	KSMENVV	KHSR	KVVVE	IDPR	SNT	E	IRH	EKVWNY	TA	AD	IS	LLAF	GTS	SFP	QIS	LA
E.grandis	LAYCFI	IGLSA	ITARFF	KSMENVV	KHSR	KVVVE	IDPQ	TNSK	VVR	Q	EKVWNY	TA	AD	IS	LLAF	GTS	SFP	QIS	LA
M.guttatus_2	LAYCFV	IGLSA	ITDRFF	KSMENVV	KHSR	KVVVE	IDPL	TNTK	IVK	EKVWNY	TA	AD	IS	LLAF	GTS	SFP	QIS	LA	
O.sativa_J1	LAYCFI	IGLSA	ITGRFF	KSMENVV	KHSR	KVVVE	IDPH	TNAT	IVKH	EKVWNY	TA	AD	IS	LLAF	GTS	SFP	QIS	LA	
O.sativa_I1	LAYCFI	IGLSA	ITGRFF	KSMENVV	KHSR	KVVVE	IDPH	TNAT	IVKH	EKVWNY	TA	AD	IS	LLAF	GTS	SFP	QIS	LA	
O.sativa_J2	LAYCFI	IGLSA	ITGRFF	KSMENVV	KHSR	KVVVE	IDPH	TNAT	IVKH	EKVWNY	TA	AD	IS	LLAF	GTS	SFP	QIS	LA	
T.aestivum	LAYCFI	IGLSA	ITARFF	KSMENVV	KHSR	KVVVE	IDPH	TNAT	IVKH	EKVWNY	TA	AD	IS	LLAF	GTS	SFP	QIS	LA	
B.distachyon	LGYCFI	IGLSA	ITARFF	KSMENVV	KHSR	KVVVE	IDPH	TNTP	IVKH	EKVWNY	TA	AD	IS	LLAF	GTS	SFP	QIS	LA	
Z.mays	LAYCFV	IGLSA	ITARFF	KSMENVV	KHSR	KVVVE	IDPR	TGAP	VVR	R	EKVWNY	TA	AD	IS	LLAF	GTS	SFP	QIS	LA
S.bicolor	LAYCFI	IGLSA	ITARFF	KSMENVV	KHSR	KVVVE	IDPH	TKEP	VVKH	EKVWNY	TA	AD	IS	LLAF	GTS	SFP	QIS	LA	
S.italica	LAYCFI	IGLSA	ITARFF	KSMENVV	KHSR	KVVVE	IDPH	TNAP	VVKH	EKVWNY	TA	AD	IS	LLAF	GTS	SFP	QIS	LA	
consensus>50	laYCFi	IGLSA	ItARFF	.SMEN!	!vkhsR	.!v..	!#p	.tn	.evir	.eKVWN	%t!	AD!	.LLAF	GTS	SFP	QIS	LA		

	120	130	140	150	160	170	180													
A.thaliana	TIDAIRN	MGERY	AGG	GPGLTV	GSAAFD	L	FFPIH	AVCV	VVP	PKAGEL	KK	IS	DLG	VWV	VEL	V	WSFWAY	I	WLY	I
A.halleri	TIDAIRN	IGERY	AGG	GPGLTV	GSAAFD	L	FFPIH	AVCV	VVP	PKAGEL	KK	IS	DLG	VWV	VEL	V	WSFWAY	I	WLY	I
A.lyrata	TIDAIRN	IGERY	AGG	GPGLTV	GSAAFD	L	FFPIH	AVCV	VVP	PKAGEL	KK	IS	DLG	VWV	VEL	V	WSFWAY	I	WLY	I
C.clementina	TIDAIRS	IGNLY	AGG	GPGLTV	GSAAFD	L	FFPIH	AVCV	VVP	PKAGEL	KK	IS	DLG	VWV	VEL	V	WSFWAY	I	WLY	I
R.communis	TIDAIRN	IGNLY	AGG	GPGLTV	GSAAFD	L	FFPIH	AVCV	VVP	PKAGEL	KK	IS	DLG	VWV	VEL	V	WSFWAY	I	WLY	I
M.esculenta	TIDAIRN	IGNLY	AGG	GPGLTV	GSAAFD	L	FFPIH	AVCV	VVP	PKAGEL	KK	IS	DLG	VWV	VEL	V	WSFWAY	I	WLY	I
P.trichocarpa	TIDAIQN	IGNLY	AGG	GPGLTV	GSAAFD	L	FFPIH	AVCV	VVP	PKAGEL	KK	IS	DLG	VWV	VEL	V	WSFWAY	I	WLY	I
P.persica	TIDAIRN	IGNLY	AGG	GPGLTV	GSAAFD	L	FFPIH	AVCV	VVP	PKAGEL	KK	IS	DLG	VWV	VEL	V	WSFWAY	I	WLY	I
C.papaya	TIDAIRN	IGNLN	AGG	GPGLTV	GSAAFD	L	FFPIH	AVCV	VVP	PKAGEL	KK	IS	DLG	VWV	VEL	V	WSFWAY	I	WLY	I
S.tuberosum	TIDAIRN	IGKLY	AGG	GPGLTV	GSAAFD	L	FFPIH	AVCV	VVP	PKAGEL	KK	IS	DLG	VWV	VEL	V	WSFWAY	I	WLY	I
S.lycopersicum	TIDAIRN	IGKLY	AGG	GPGLTV	GSAAFD	L	FFPIH	AVCV	VVP	PKAGEL	KK	IS	DLG	VWV	VEL	V	WSFWAY	I	WLY	I
M.guttatus_1	TIDAIRN	IGSLY	AGG	GPGLTV	GSAAFD	L	FFPIH	AVCV	VVP	PKAGEL	KK	IS	DLG	VWV	VEL	V	WSFWAY	I	WLY	I
C.sativus	TIDAIRN	IGNLY	AGG	GPGLTV	GSAAFD	L	FFPIH	AVCV	VVP	PKAGEL	KK	IS	DLG	VWV	VEL	V	WSFWAY	I	WLY	I
G.max	TIDAIQN	IGKLY	AGG	GPGLTV	GSAAFD	L	FFPIH	AVCV	VVP	PKAGEL	KK	IS	DLG	VWV	VEL	V	WSFWAY	I	WLY	I
M.truncatula	TIDAIRN	IGDLY	AGG	GPGLTV	GSAAFD	L	FFPIH	AVCV	VVP	PKAGEL	KK	IS	DLG	VWV	VEL	V	WSFWAY	I	WLY	I
A.coerulea	TIDAIRN	IGQIY	AGG	GPGLTV	GSAAFD	L	FFPIH	AVCV	VVP	PKAGEL	KK	IS	DLG	VWV	VEL	V	WSFWAY	I	WLY	I
V.vinifera	IDSIQN	IGSRY	AGG	GPGLTV	GSAAFD	L	FFPIH	AVCV	VVP	PKAGEL	KK	IS	DLG	VWV	VEL	V	WSFWAY	I	WLY	I
E.grandis	TIDALRN	IGELY	AGG	GPGLTV	GSAAFD	L	FFPIH	AVCV	VVP	PKAGEL	KK	IS	DLG	VWV	VEL	V	WSFWAY	I	WLY	I
M.guttatus_2	TIDAIRN	IGSLT	AGG	GPGLTV	GSAAFD	L	FFPIH	AVCV	VVP	PKAGEL	KK	IS	DLG	VWV	VEL	V	WSFWAY	I	WLY	I
O.sativa_J1	TIDAIRN	IGQLT	AGG	GPGLTV	GSAAFD	L	FFPIH	AVCV	VMP	PRAGSK	KK	IS	DLG	VWV	VEL	V	WSFWAY	I	WLY	I
O.sativa_I1	TIDAIRN	IGQLT	AGG	GPGLTV	GSAAFD	L	FFPIH	AVCV	VMP	PRAGSK	KK	IS	DLG	VWV	VEL	V	WSFWAY	I	WLY	I
O.sativa_J2	TIDAIRN	IGQLT	AGG	GPGLTV	GSAAFD	L	FFPIH	AVCV	VMP	PRAGSK	KK	IS	DLG	VWV	VEL	V	WSFWAY	I	WLY	I
T.aestivum	TIDAIRN	IGQLT	AGG	GPGLTV	GSAAFD	L	FFPIH	AVCV	VMP	PRAGSK	KK	IS	DLG	VWV	VEL	V	WSFWAY	I	WLY	I
B.distachyon	TIDAIRN	IGQLT	AGG	GPGLTV	GSAAFD	L	FFPIH	AVCV	VMP	PRAGSK	KK	IS	DLG	VWV	VEL	V	WSFWAY	I	WLY	I
Z.mays	TIDAIRN	IGQLT	AGG	GPGLTV	GSAAFD	L	FFPIH	AVCV	VMP	PRAGSK	KK	IS	DLG	VWV	VEL	V	WSFWAY	I	WLY	I
S.bicolor	TIDAIRN	IGQLT	AGG	GPGLTV	GSAAFD	L	FFPIH	AVCV	VMP	PRAGSK	KK	IS	DLG	VWV	VEL	V	WSFWAY	I	WLY	I
S.italica	TIDAIRN	IGQLT	AGG	GPGLTV	GSAAFD	L	FFPIH	AVCV	VMP	PRAGSK	KK	IS	DLG	VWV	VEL	V	WSFWAY	I	WLY	I
consensus>50	tIDairn	Igqly	AGG	GPGLTV	GSAAFD	\$	FFPIH	AVCV	vvp	PkaGe	lKk	IS	DLg	VWV	VEL	V	WSFWAY	I	WLY	I

	190	200	210	220	230	240	250				
A.thaliana	ILEVWS	PNVITLV	EALLTVLQ	YGLLLVHA	YAQDKRWPYL	SLPMSR	GDPEE	WVPE	EIDT	SKDND	NDVHD
A.halleri	ILEVWS	PNVITLV	EALLTVLQ	YGLLLVHA	YAQDKRWPYL	SLPMSR	GDPEE	WVPE	EIDT	SKDND	NDVHD
A.lyrata	ILEVWS	PNVITLV	EALLTVLQ	YGLLLVHA	YAQDKRWPYL	SLPMSR	GDPEE	WVPE	EIDT	SKDND	NDVHD
C.clementina	ILEVWT	PNVITLV	EALLTVLQ	YGLLLVHA	YAQDKRWPYL	SLPIAR	TERPE	WVPE	QETTS	CKDENC	DYDEC
R.communis	ILEVWT	PNVITLV	EALLTVLQ	YGLLLVHA	YAQDKRWPYL	SLPIER	TERPE	WVPE	EATSK	HKRPH	LDKVHEPH
M.esculenta	ILEVWT	PNVITLV	EALLTVLQ	YGLLLVHA	YAQDKRWPYL	SLPLGR	TERPE	WVPE	EITSK	HKRPH	LDKVHEPH
P.trichocarpa	ILEVWT	PNVITLV	EALLTVLQ	YGLLLVHA	YAQDKRWPYL	SLPIPR	TERPE	WVPE	GVPSP	PTHENN	YVGE
P.persica	ILEVWT	PNVITLV	EALLTVLQ	YGLLLVHA	YAQDKRWPYL	SLPLPR	TERPE	WVPE	AEVVT	CKSDS	GPCNNY
C.papaya	ILEVWT	PNVITLV	EALLTVLQ	YGLLLVHA	YAQDKRWPYL	SLPIGR	TERPE	WVPE	EVAS	VDHNN	DKF
S.tuberosum	ILEVWT	PNVITLV	EALLTVLQ	YGLLLVHA	YAQDKRWPYL	SLPLER	TERPE	WVPE	AEVVT	CKSDS	GPCNNY
S.lycopersicum	ILEVWT	PNVITLV	EALLTVLQ	YGLLLVHA	YAQDKRWPYL	SLPLER	TERPE	WVPE	AEVVT	CKSDS	GPCNNY
M.guttatus_1	ILEVWT	PNVITLV	EALLTVLQ	YGLLLVHA	YAQDKRWPYL	SLPIGR	TERPE	WVPE	EITSK	HKRPH	LDKVHEPH
C.sativus	ILEVWT	PKVITLV	EALLTVLQ	YGLLLVHA	YAQDKRWPYL	SLPLAR	TERPE	WVPE	EIDT	CKQDN	PCREEF
G.max	ILEVWT	PNVITLV	EALLTVLQ	YGLLLVHA	YAQDKRWPYL	SLPIAR	TERPE	WVPE	ETPY	FQHEA	HAEVDF
M.truncatula	ILEVWT	PNVITLV	EALLTVLQ	YGLLLVHA	YAQDKRWPYL	SLPIAR	TERPE	WVPE	ETPK	QKSH	HERVEC
A.coerulea	ILEVWT	PNVITLV	EALLTVLQ	YGLLLVHA	YAQDKRWPYL	SLPLAR	TERPE	WVPE	EASL	DKLNN	DYSEI
V.vinifera	ILEVWT	PNVITLV	EALLTVLQ	YGLLLVHA	YAQDKRWPYL	SLPLPR	TERPE	WVPE	EASL	DKLNN	DYSEI
E.grandis	ILKVT	PDIVT	LWEALL	TVLQF	GLLLVHA	YAQDKRWPYL	SLPLAR	GERPE	EWVPE	EASL	YKVDN
M.guttatus_2	ILKIWT	PNVITLV	EALLTVLQ	YGLLLVHA	YAQDKRWPYL	SLPMTS	TERPE	WVPE	EKNAP	YRDN	GKTR
O.sativa_J1	ILEVWT	PRVITLV	EALLTVLQ	YGLLLVHA	YAQDKRWPYL	SIPLAR	GERPE	WVPE	EASL	VDYDN	YD
O.sativa_J2	ILEVWT	PRVITLV	EALLTVLQ	YGLLLVHA	YAQDKRWPYL	SIPLAR	GERPE	WVPE	EASL	VDYDN	YD
O.sativa_I1	ILEVWT	PRVITLV	EALLTVLQ	YGLLLVHA	YAQDKRWPYL	SIPLAR	GERPE	WVPE	EASL	VDYDN	YD
O.sativa_J2	ILEVWT	PRVITLV	EALLTVLQ	YGLLLVHA	YAQDKRWPYL	SIPLAR	GERPE	WVPE	EASL	VDYDN	YD
T.aestivum	ILEVWT	PNVITLV	EALLTVLQ	YGLLLVHA	YAQDKRWPYL	SIPLVR	GERPE	WVPE	EADT	SLHDK	NC
B.distachyon	ILEVWT	PNVITLV	EALLTVLQ	YGLLLVHA	YAQDKRWPYL	SIPLVR	GERPE	WVPE	EADT	SLHDK	NC
Z.mays	ILEVWT	PRVITLV	EALLTVLQ	YGLLLVHA	YAQDKRWPYL	SIPFAR	GERPE	WVPE	EDVS	AVYAK	CD
S.bicolor	ILEVWT	PRVITLV	EALLTVLQ	YGLLLVHA	YAQDKRWPYL	SIPFAR	GERPE	WVPE	EDVS	AVYAK	CD
S.italica	ILEVWT	PRVITLV	EALLTVLQ	YGLLLVHA	YAQDKRWPYL	SIPFAR	GERPE	WVPE	EDVS	AVYAK	CD
consensus>50	Ile!WtPn!	!TlweAll	TlVlQ%	GLLLiHa	YAQDKrwp%	lSlPl.R.	#Rpe#WVPE	E.s...	ddn	.....

	260	270	280	290	300	310							
A.thaliana	VYSDAAQ	EAVESGSR	NIVDIFS	IHSAN	.....	NDTGT	TYHTVA	DTP	PDSATK	KGKAKN	STVFDI	WKHQ
A.halleri	VYSDAAQ	EAVESGSR	NIVDIFS	IHSAN	.....	NDTGT	TYHTVA	DTP	PDSATK	KGKAKN	STVFDI	WKHQ
A.lyrata	VYSDAAQ	EAVESGSR	NIVDIFS	IHSAN	.....	NNTGT	TYHTVA	DTP	PDSATK	KGKAKN	STVFDI	WKHQ
C.clementina	SEIL...	QVGEDESR	NIVDIFS	IHSAN	.....	NDTGT	TYHTVA	DTP	PDSATK	KGKAKN	STVFDI	WKHQ
R.communis	SEIV...	QVGEDESR	NIVDIFS	IHSAN	.....	NDTGT	TYHTVA	DTP	PDSATK	KGKAKN	STVFDI	WKHQ
M.esculenta	SEIL...	QVGEDESR	NIVDIFS	IHSAN	.....	NDTGT	TYHTVA	DTP	PDSATK	KGKAKN	STVFDI	WKHQ
P.trichocarpa	SEIL...	QVGEDESR	NIVDIFS	IHSAN	.....	NDTGT	TYHTVA	DTP	PDSATK	KGKAKN	STVFDI	WKHQ
P.persica	SEIL...	QVGEDESR	NIVDIFS	IHSAN	.....	NDTGT	TYHTVA	DTP	PDSATK	KGKAKN	STVFDI	WKHQ
C.papaya	SEIV...	QVGEDESR	NIVDIFS	IHSAN	.....	NDTGT	TYHTVA	DTP	PDSATK	KGKAKN	STVFDI	WKHQ
S.tuberosum	SEIV...	QVGEDESR	NIVDIFS	IHSAN	.....	NDTGT	TYHTVA	DTP	PDSATK	KGKAKN	STVFDI	WKHQ
S.lycopersicum	SEIV...	QVGEDESR	NIVDIFS	IHSAN	.....	NDTGT	TYHTVA	DTP	PDSATK	KGKAKN	STVFDI	WKHQ
M.guttatus_1	EDDH...	ESGR...	NIVDIFS	IHSAN	.....	NDTGT	TYHTVA	DTP	PDSATK	KGKAKN	STVFDI	WKHQ
C.sativus	SEIL...	QVGEDESR	NIVDIFS	IHSAN	.....	NDTGT	TYHTVA	DTP	PDSATK	KGKAKN	STVFDI	WKHQ
G.max	SDIK...	HVNE	ENG	DIVDIFS	IHSAN	NDTGT	TYHTVA	DTP	PDSATK	KGKAKN	STVFDI	WKHQ
M.truncatula	SEIN...	QVGEDESR	NIVDIFS	IHSAN	.....	NDTGT	TYHTVA	DTP	PDSATK	KGKAKN	STVFDI	WKHQ
A.coerulea	LQLS...	E...	ENG	DIVDIFS	IHSAN	NDTGT	TYHTVA	DTP	PDSATK	KGKAKN	STVFDI	WKHQ
V.vinifera	SELF...	QVGEDESR	NIVDIFS	IHSAN	.....	NDTGT	TYHTVA	DTP	PDSATK	KGKAKN	STVFDI	WKHQ
E.grandis	SEIL...	QVGEDESR	NIVDIFS	IHSAN	.....	NDTGT	TYHTVA	DTP	PDSATK	KGKAKN	STVFDI	WKHQ
M.guttatus_2	..DNYP	EVDEDR	NIVDIFS	IHSAN	.....	NDTGT	TYHTVA	DTP	PDSATK	KGKAKN	STVFDI	WKHQ
O.sativa_J1	.GIGDIL	PGQ...	NIVDIFS	IHSAN	.....	NDTGT	TYHTVA	DTP	PDSATK	KGKAKN	STVFDI	WKHQ
O.sativa_I1	.GIGDIL	PGQ...	NIVDIFS	IHSAN	.....	NDTGT	TYHTVA	DTP	PDSATK	KGKAKN	STVFDI	WKHQ
O.sativa_J2	.GIGDIL	PGQ...	NIVDIFS	IHSAN	.....	NDTGT	TYHTVA	DTP	PDSATK	KGKAKN	STVFDI	WKHQ
T.aestivum	.ENSDIL	PRE...	NIVDIFS	IHSAN	.....	NDTGT	TYHTVA	DTP	PDSATK	KGKAKN	STVFDI	WKHQ
B.distachyon	.ESSEIL	PRE...	NIVDIFS	IHSAN	.....	NDTGT	TYHTVA	DTP	PDSATK	KGKAKN	STVFDI	WKHQ
Z.mays	.GIDETL	PMGADG	NIVDIFS	IHSAN	.....	NDTGT	TYHTVA	DTP	PDSATK	KGKAKN	STVFDI	WKHQ
S.bicolor	.DTNETL	PIISANR	NIVDIFS	IHSAN	.....	NDTGT	TYHTVA	DTP	PDSATK	KGKAKN	STVFDI	WKHQ
S.italica	.ETSEIL	PGSSDK	NIVDIFS	IHSAN	.....	NDTGT	TYHTVA	DTP	PDSATK	KGKAKN	STVFDI	WKHQ
consensus>50	.e.....	q.....	n.nivdifs	ihs	.....	v.....	d.....	e.s.....	k.....	ed.....	lsiwkq	q

	320	330	340	350	360	370	380						
A.thaliana	FVDAIT	LETS	ESKKVDSI	YLRIR	AKSFW	HLLLPW	KLLFAF	VPPCNIAH	GWIAF	ICSL	LFISG	VAFV	TRF
A.halleri	FVDAIT	LETS	ESKKVDSI	YLRIR	AKSFW	HLLLPW	KLLFAF	VPPCNIAH	GWIAF	ICSL	LFISG	VAFV	TRF
A.lyrata	FVDAIT	LETS	ESKKVDSI	YLRIR	AKSFW	HLLLPW	KLLFAF	VPPCNIAH	GWIAF	ICSL	LFISG	VAFV	TRF
C.clementina	FVDAIT	LETS	ESKKVDSI	YLRIR	AKSFW	HLLLPW	KLLFAF	VPPCNIAH	GWIAF	ICSL	LFISG	VAFV	TRF
R.communis	FVDAIT	LETS	ESKKVDSI	YLRIR	AKSFW	HLLLPW	KLLFAF	VPPCNIAH	GWIAF	ICSL	LFISG	VAFV	TRF
M.esculenta	FVDAIT	LETS	ESKKVDSI	YLRIR	AKSFW	HLLLPW	KLLFAF	VPPCNIAH	GWIAF	ICSL	LFISG	VAFV	TRF
P.trichocarpa	FVDAIT	LETS	ESKKVDSI	YLRIR	AKSFW	HLLLPW	KLLFAF	VPPCNIAH	GWIAF	ICSL	LFISG	VAFV	TRF
P.persica	FVDAIT	LETS	ESKKVDSI	YLRIR	AKSFW	HLLLPW	KLLFAF	VPPCNIAH	GWIAF	ICSL	LFISG	VAFV	TRF
C.papaya	FVDAIT	LETS	ESKKVDSI	YLRIR	AKSFW	HLLLPW	KLLFAF	VPPCNIAH	GWIAF	ICSL	LFISG	VAFV	TRF
S.tuberosum	FVDAIT	LETS	ESKKVDSI	YLRIR	AKSFW	HLLLPW	KLLFAF	VPPCNIAH	GWIAF	ICSL	LFISG	VAFV	TRF
S.lycopersicum	FVDAIT	LETS	ESKKVDSI	YLRIR	AKSFW	HLLLPW	KLLFAF	VPPCNIAH	GWIAF	ICSL	LFISG	VAFV	TRF
M.guttatus_1	FVDAIT	LETS	ESKKVDSI	YLRIR	AKSFW	HLLLPW	KLLFAF	VPPCNIAH	GWIAF	ICSL	LFISG	VAFV	TRF
C.sativus	FVDAIT	LETS	ESKKVDSI	YLRIR	AKSFW	HLLLPW	KLLFAF	VPPCNIAH	GWIAF	ICSL	LFISG	VAFV	TRF
G.max	FVDAIT	LETS	ESKKVDSI	YLRIR	AKSFW	HLLLPW	KLLFAF	VPPCNIAH	GWIAF	ICSL	LFISG	VAFV	TRF
M.truncatula	FVDAIT	LETS	ESKKVDSI	YLRIR	AKSFW	HLLLPW	KLLFAF	VPPCNIAH	GWIAF	ICSL	LFISG	VAFV	TRF
A.coerulea	FVDAIT	LETS	ESKKVDSI	YLRIR	AKSFW	HLLLPW	KLLFAF	VPPCNIAH	GWIAF	ICSL	LFISG	VAFV	TRF
V.vinifera	FVDAIT	LETS	ESKKVDSI	YLRIR	AKSFW	HLLLPW	KLLFAF	VPPCNIAH	GWIAF	ICSL	LFISG	VAFV	TRF
E.grandis	FVDAIT	LETS	ESKKVDSI	YLRIR	AKSFW	HLLLPW	KLLFAF	VPPCNIAH	GWIAF	ICSL	LFISG	VAFV	TRF
M.guttatus_2	FVDAIT	LETS	ESKKVDSI	YLRIR	AKSFW	HLLLPW	KLLFAF	VPPCNIAH	GWIAF	ICSL	LFISG	VAFV	TRF
O.sativa_J1	FVDAIT	LETS	ESKKVDSI	YLRIR	AKSFW	HLLLPW	KLLFAF	VPPCNIAH	GWIAF	ICSL	LFISG	VAFV	TRF
O.sativa_I1	FVDAIT	LETS	ESKKVDSI	YLRIR	AKSFW	HLLLPW	KLLFAF	VPPCNIAH	GWIAF	ICSL	LFISG	VAFV	TRF
O.sativa_J2	FVDAIT	LETS	ESKKVDSI	YLRIR	AKSFW	HLLLPW	KLLFAF	VPPCNIAH	GWIAF	ICSL	LFISG	VAFV	TRF
T.aestivum	FVDAIT	LETS	ESKKVDSI	YLRIR	AKSFW	HLLLPW	KLLFAF	VPPCNIAH	GWIAF	ICSL	LFISG	VAFV	TRF
B.distachyon	FVDAIT	LETS	ESKKVDSI	YLRIR	AKSFW	HLLLPW	KLLFAF	VPPCNIAH	GWIAF	ICSL	LFISG	VAFV	TRF
Z.mays	FVDAIT	LETS	ESKKVDSI	YLRIR	AKSFW	HLLLPW	KLLFAF	VPPCNIAH	GWIAF	ICSL	LFISG	VAFV	TRF
S.bicolor	FVDAIT	LETS	ESKKVDSI	YLRIR	AKSFW	HLLLPW	KLLFAF	VPPCNIAH	GWIAF	ICSL	LFISG	VAFV	TRF
S.italica	FVDAIT	LETS	ESKKVDSI	YLRIR	AKSFW	HLLLPW	KLLFAF	VPPCNIAH	GWIAF	ICSL	LFISG	VAFV	TRF
consensus>50	FvDa	.les	esrkmdsi	ylr	.arifw	qlllpw	kllf	afvppq	iahgwiaf	icsl	lfisg	ia	ivtk

	390	400	410	420	430	440	450
A.thaliana	TDLISCVTGINPYVIAFTALASG	TSWPDLVASKIAAERQLTADSAT	ANITCSNSVNIYVIGV	PWLINTV			
A.halleri	TDLISCVTGINPYVIAFTALASG	TSWPDLVASKIAAERQLTADSAT	ANITCSNSVNIYVIGV	PWLINTV			
A.lyrata	TDLISCVTGINPYVIAFTALAGG	TSWPDLVASKIAAERQLTADSAT	ANITCSNSVNIYVIGV	PWLINTV			
C.clementina	TDIIISCVTGINAYVIAFTALASG	TSWPDLVASKIAAERQLTADSAT	ANITCSNSVNIYVIGV	PWLIDTA			
R.communis	TDLISCVTGINAYVIAFTALAACT	TSWPDLVASKIAAERQLTADSAT	ANITCSNSVNIYVIGV	PWLIDTA			
M.esculenta	TDLISCVTGINAYVIAFTALASG	TSWPDLVASKIAAERQLTADSAT	ANITCSNSVNIYVIGV	PWLIDTA			
P.trichocarpa	TDLISCVTGINAYVIAFTALASG	TSWPDLVASKIAAERQLTADSAT	ANITCSNSVNIYVIGV	PWLIDTA			
P.persica	TDLISCVTGINPYVIAFTALASG	TSWPDLVASKIAAERQLTADSAT	ANITCSNSVNIYVIGV	PWLIDTA			
C.papaya	TDLVSCVTGINPYVIAFTALACG	TSWPDLVASKIAAERQLTADSAT	ANITCSNSVNIYVIGV	PWLINTL			
S.tuberosum	TDLISCVTGINPYVIAFTALASG	TSWPDLVASKIAAERQLTADSAT	ANITCSNSVNIYVIGV	PWLINTL			
S.lycopersicum	TDLISCVTGINPYVIAFTALASG	TSWPDLVASKIAAERQLTADSAT	ANITCSNSVNIYVIGV	PWLIDTL			
M.guttatus_1	TDLISCVTGINAYVIAFTALAACT	TSWPDLVASKIAAERQLTADSAT	ANITCSNSVNIYVIGV	PWLINTM			
C.sativus	TDLISCVSGINPYVIAFTALASG	TSWPDLVASKIAAERQLTADSAT	ANITCSNSVNIYVIGV	PWLIST			
G.max	TDLISCVTGINAYVIAFTALASG	TSWPDLVASKIAAERQLTADSAT	ANITCSNSVNIYVIGV	PWLIDTL			
M.truncatula	TDLISCVTGINAYVIAFTALASG	TSWPDLVASKIAAERQLTADSAT	ANITCSNSVNIYVIGV	PWLIDTL			
A.coerulea	TDLMISCVTGINGYVIAFTALASG	TSWPDLVASKIAAERQLTADSAT	ANITCSNSVNIYVIGV	PWLIDTL			
V.vinifera	TDLISCVTGINAYVIAFTALAACT	TSWPDLVASKIAAERQLTADSAT	ANITCSNSVNIYVIGV	PWLINTT			
E.grandis	TDLISCVTGINAYVIAFTALACT	TSWPDLVASKIAAERQLTADSAT	ANITCSNSVNIYVIGV	PWLINTA			
M.guttatus_2	TDLISCVTGINAYVIAFTALAACT	TSWPDLVASKIAAERQLTADSAT	ANITCSNSVNIYVIGV	PWLIDTL			
O.sativa_J1	TDQISCVTGVSPYVIAFTALAACT	TSWPDLVASKIAAERQLTADSAT	ANITCSNSVNIYVIGV	PWLIDTM			
O.sativa_I1	TDQISCVTGVSPYVIAFTALAACT	TSWPDLVASKIAAERQLTADSAT	ANITCSNSVNIYVIGV	PWLIDTM			
O.sativa_J2	TDQISCVTGVSPYVIAFTALAACT	TSWPDLVASKIAAERQLTADSAT	ANITCSNSVNIYVIGV	PWLIDTM			
T.aestivum	TDQISCVTGLNPYVIAFTALAACT	TSWPDLVASKIAAERQLTADSAT	ANITCSNSVNIYVIGV	PWLINTV			
B.distachyon	TDQISCVTGVNLYVIAFTALAACT	TSWPDLVASKIAAERQLTADSAT	ANITCSNSVNIYVIGV	PWLIDTV			
Z.mays	TDQISCVTGVSPYVIAFTALAACT	TSWPDLVASKIAAERQLTADSAT	ANITCSNSVNIYVIGV	PWLIDTV			
S.bicolor	TDQISCVTGVSPYVIAFTALAACT	TSWPDLVASKIAAERQLTADSAT	ANITCSNSVNIYVIGV	PWLIDTV			
S.italica	TDQISCVTGVSPYVIAFTALAACT	TSWPDLVASKIAAERQLTADSAT	ANITCSNSVNIYVIGV	PWLIDTV			
consensus>50	TDLISCVtGinpY!IAfTALA.GtSWPDLVASKIAaERQ.TADSAITaNitCSNSVNIYvGIG!PWLIDT.						

	460	470	480	490	500	510	520
A.thaliana	YNFYAYREPLYIENAKGLSFSLLIFFATS	VGCIvLVLRRLIIGAE	LGPPRLWAWLTSAYFMMLWVVFV				
A.halleri	YNFYAYREPLYIENAKGLSFSLLIFFATS	VGCIvLVLRRLIIGAE	LGPPRLWAWLTSAYFMMLWVVFV				
A.lyrata	YNFYAYREPLYIENAKGLSFSLLIFFATS	VGCIvLVLRRLIIGAE	LGPPRLWAWLTSAYFMMLWVVFV				
C.clementina	YNFYAYREPLYIENAKGLSFSLLIFFATS	VGCIvLVLRRLIIGAE	LGPPRLWAWLTSAYFMMLWVVFV				
R.communis	YNFYAYREPLYIENAKGLSFSLLIFFATS	VGCIvLVLRRLIIGAE	LGPPRLWAWLTSAYFMMLWVVFV				
M.esculenta	YNFYAYREPLYIENAKGLSFSLLIFFATS	VGCIvLVLRRLIIGAE	LGPPRLWAWLTSAYFMMLWVVFV				
P.trichocarpa	YNFYAYREPLYIENAKGLSFSLLIFFATS	VGCIvLVLRRLIIGAE	LGPPRLWAWLTSAYFMMLWVVFV				
P.persica	YNFYAYREPLYIENAKGLSFSLLIFFATS	VGCIvLVLRRLIIGAE	LGPPRLWAWLTSAYFMMLWVVFV				
C.papaya	YNFYAYREPLYIENAKGLSFSLLIFFATS	VGCIvLVLRRLIIGAE	LGPPRLWAWLTSAYFMMLWVVFV				
S.tuberosum	YNFYAYREPLYIENAKGLSFSLLIFFATS	VGCIvLVLRRLIIGAE	LGPPRLWAWLTSAYFMMLWVVFV				
S.lycopersicum	YNFYAYREPLYIENAKGLSFSLLIFFATS	VGCIvLVLRRLIIGAE	LGPPRLWAWLTSAYFMMLWVVFV				
M.guttatus_1	YNFYAYREPLYIENAKGLSFSLLIFFATS	VGCIvLVLRRLIIGAE	LGPPRLWAWLTSAYFMMLWVVFV				
C.sativus	YNFYAYREPLYIENAKGLSFSLLIFFATS	VGCIvLVLRRLIIGAE	LGPPRLWAWLTSAYFMMLWVVFV				
G.max	YNFYAYREPLYIENAKGLSFSLLIFFATS	VGCIvLVLRRLIIGAE	LGPPRLWAWLTSAYFMMLWVVFV				
M.truncatula	YNFYAYREPLYIENAKGLSFSLLIFFATS	VGCIvLVLRRLIIGAE	LGPPRLWAWLTSAYFMMLWVVFV				
A.coerulea	YNFYAYREPLYIENAKGLSFSLLIFFATS	VGCIvLVLRRLIIGAE	LGPPRLWAWLTSAYFMMLWVVFV				
V.vinifera	YNFYAYREPLYIENAKGLSFSLLIFFATS	VGCIvLVLRRLIIGAE	LGPPRLWAWLTSAYFMMLWVVFV				
E.grandis	YNFYAYREPLYIENAKGLSFSLLIFFATS	VGCIvLVLRRLIIGAE	LGPPRLWAWLTSAYFMMLWVVFV				
M.guttatus_2	YNFYAYREPLYIENAKGLSFSLLIFFATS	VGCIvLVLRRLIIGAE	LGPPRLWAWLTSAYFMMLWVVFV				
O.sativa_J1	YNFYAYREPLYIENAKGLSFSLLIFFATS	VGCIvLVLRRLIIGAE	LGPPRLWAWLTSAYFMMLWVVFV				
O.sativa_I1	YNFYAYREPLYIENAKGLSFSLLIFFATS	VGCIvLVLRRLIIGAE	LGPPRLWAWLTSAYFMMLWVVFV				
O.sativa_J2	YNFYAYREPLYIENAKGLSFSLLIFFATS	VGCIvLVLRRLIIGAE	LGPPRLWAWLTSAYFMMLWVVFV				
T.aestivum	YNFYAYREPLYIENAKGLSFSLLIFFATS	VGCIvLVLRRLIIGAE	LGPPRLWAWLTSAYFMMLWVVFV				
B.distachyon	YNFYAYREPLYIENAKGLSFSLLIFFATS	VGCIvLVLRRLIIGAE	LGPPRLWAWLTSAYFMMLWVVFV				
Z.mays	YNFYAYREPLYIENAKGLSFSLLIFFATS	VGCIvLVLRRLIIGAE	LGPPRLWAWLTSAYFMMLWVVFV				
S.bicolor	YNFYAYREPLYIENAKGLSFSLLIFFATS	VGCIvLVLRRLIIGAE	LGPPRLWAWLTSAYFMMLWVVFV				
S.italica	YNFYAYREPLYIENAKGLSFSLLIFFATS	VGCIvLVLRRLIIGAE	LGPPRLWAWLTSAYFMMLWVVFV				
consensus>50	YN%faY.ePL.!e#A.GLSFSLL!FFaTSvgCI.vLVLRRLtlgAELGGPrLWawvTsv%fmLlwV!Fvv						

	530
A.thaliana	ISSLKVSGVI
A.halleri	ISSLKVSGVI
A.lyrata	ISSLKVSGII
C.clementina	ISSLKVSGII
R.communis	ISSLRVSGII
M.esculenta	ISSLRVSGFI
P.trichocarpa	ISSLRVSGII
P.persica	ISSLKVSGII
C.papaya	ISSLRVSGII
S.tuberosum	ISSLRVSGII
S.lycopersicum	ISSLRVSGII
M.guttatus_1	ISSLRVSGFI
C.sativus	ISSLKVSDII
G.max	ISSLKVSGFI
M.truncatula	ISSLKVSGFI
A.coerulea	ISSLKVSDII
V.vinifera	ISSLKVIYGI
E.grandis	ISSLKVSGII
M.guttatus_2	ISSLQVSNII
O.sativa_J1	ISSLKISGVI
O.sativa_I1	ISSLKISGVI
O.sativa_J2	ISSLRISGVI
T.aestivum	ISSLRVSGVI
B.distachyon	ISSLRVSGVI
Z.mays	FSSLRVSGVI
S.bicolor	FSSLRVSGVI
S.italica	FSSLKVSGII
consensus>50	ISSLk!sgII