

## Supplementary Table 1

Accession Numbers or Gene IDs of Amino Acid Sequences Used in Figure 4 and in Supplementary Figures S4 and S5

Species	Designation and PSY type	Accession or ID
<i>Acquilegia coerulea</i>	AcPSY3	Aquca_009_00453
<i>Amborella trichopoda</i>	AtrPSY1	evm_27.TU.AmTr_v1.0_scaffold00032.92
<i>Amborella trichopoda</i>	AtrPSY2	evm_27.TU.AmTr_v1.0_scaffold00044.14
<i>Amborella trichopoda</i>	AtrPSY3 (truncated, 190 aa)	evm_27.TU.AmTr_v1.0_scaffold00133.50
<i>Arabidopsis thaliana</i>	AtPSY	At5g17230
<i>Brachypodium distachon</i>	BdPSY1	Bradi1g29590
<i>Brachypodium distachon</i>	BdPSY2	Bradi4g01100
<i>Brachypodium distachon</i>	BdPSY3	Bradi4g37520
<i>Brassica napus</i>	BnPSY1a	KF297333
<i>Brassica napus</i>	BnPSY1b	KF297332
<i>Brassica napus</i>	BnPSY1c	KF297331
<i>Capsicum annuum</i>	CaPSY1	P37272 (PSY_CAPAN)
<i>Chlamydomonas reinhardtii</i>	CrPSY	XP_001701192
<i>Citrus sinensis</i>	CsPSY1	orange1.1g044623m
<i>Citrus sinensis</i>	CsPSY3a (formerly CsPSY2)	orange1.1g016696m
<i>Citrus sinensis</i>	CsPSY3b (formerly CsPSY3)	orange1.1g036368m
<i>Cucumis melo</i>	CmPSY1	JF745118
<i>Cucumis melo</i>	CmPSY3 (formerly CmPSY2)	JF745117
<i>Daucus carota</i>	DcPSY1	DQ192186
<i>Daucus carota</i>	DcPSY2	DQ192187
<i>Daucus carota</i>	DcPSY3	XP_017217851
<i>Dunaliella bardawis</i>	DbPSY	U91900
<i>Eriobotrya japonica</i>	EjPSY1	KF922363.1
<i>Eriobotrya japonica</i>	EjPSY2a	KF922364.1
<i>Eriobotrya japonica</i>	EjPSY2b	KF922366.1
<i>Eriobotrya japonica</i>	EjPSY3	KF922367.1
<i>Fragaria vesca</i>	FvPSY1	gene31674-v1.0-hybrid
<i>Fragaria vesca</i>	FvPSY2	gene28765-v1.0-hybrid
<i>Fragaria vesca</i>	FvPSY3	gene24795-v1.0-hybrid
<i>Glycine max</i>	GmPSY1	Glyma.02G240200
<i>Glycine max</i>	GmPSY2a	Glyma.14G031200
<i>Glycine max</i>	GmPSY2b	Glyma.18G111900
<i>Glycine max</i>	GmPSY3	Glyma.18G000600
<i>Haematococcus fluvialis</i>	HfPSY	DQ057355
<i>Lotus japonicus</i>	LjPSY1	Lj2g3v2507910.2
<i>Lotus japonicus</i>	LjPSY2	Lj0g3v0184729.2
<i>Lotus japonicus</i>	LPSY3	Lj0g3v0278879.2
<i>Malus domestica</i>	MdPSY2a	MDP0000177623
<i>Malus domestica</i>	MdPSY2b	MDP0000237124
<i>Malus domestica</i>	MdPSY3	MDP0000151924
<i>Manihot esculenta</i>	MePSY1	Manes.02G081700.1
<i>Manihot esculenta</i>	MePSY2 (PSY1-type)	Manes.01G124200.1
<i>Manihot esculenta</i>	MePSY3	Manes.03G084700.1

<i>Medicago truncatula</i>	MtPSY1	Medtr5g076620
<i>Medicago truncatula</i>	MtPSY2a	Medtr3g450510
<i>Medicago truncatula</i>	MtPSY2b	Medtr5g090780
<i>Medicago truncatula</i>	MtPSY3	Medtr3g083630
<i>Musa acuminata</i>	MaPSY1a	GSMUA_AchrUn_randomG09240_001
<i>Musa acuminata</i>	MaPSY1b	GSMUA_Achr11T07450_001
<i>Musa acuminata</i>	MaPSY2a	GSMUA_Achr9G10050_001
<i>Musa acuminata</i>	MaPSY2b	GSMUA_Achr6G31560_001
<i>Oryza sativa</i>	OsPSY1	LOC_Os06g51290
<i>Oryza sativa</i>	OsPSY2	LOC_Os12g43130
<i>Oryza sativa</i>	OsPSY3	LOC_Os09g38320
<i>Panicum hallerii</i>	PhPSY3	Pahal.B03778
<i>Pantoea ananatis</i>	PactB	D90087
<i>Phaseolus vulgaris</i>	PvPSY1	Phvul.008G241500
<i>Phaseolus vulgaris</i>	PvPSY2a	Phvul.006G024100
<i>Phaseolus vulgaris</i>	PvPSY2b	Phvul.008G195800
<i>Phaseolus vulgaris</i>	PvPSY3	Phvul.001G268600
<i>Physcomitrella patens</i>	PpPSY1a	Pp3c24_10180
<i>Physcomitrella patens</i>	PpPSY1b	Pp3c24_16380
<i>Physcomitrella patens</i>	PpPSY1c	Pp3c8_21760
<i>Picea abies</i>	PaPSY	EF676374.1
<i>Ricinus communis</i>	RcPSY3	29835.t000015
<i>Selaginella moellendorffii</i>	SmPSY	233658 (alias fgenesh1_pm.C scaffold 47000028)
<i>Setaria italica</i>	SiPSY3	Seita.2G303000
<i>Solanum lycopersicum</i>	SIPSY1	Solyc03g031860
<i>Solanum lycopersicum</i>	SIPSY2 (PSY1-type)	Solyc02g081330
<i>Solanum lycopersicum</i>	SIPSY3	Solyc01g005940
<i>Sorghum bicolor</i>	SbPSY1	Sobic.010G276400
<i>Sorghum bicolor</i>	SbPSY2	Sobic.008G180800
<i>Sorghum bicolor</i>	SbPSY3	Sobic.002G292600
<i>Spirodela polyrhiza</i>	SpPSY1	Spipo1G0051600
<i>Spirodela polyrhiza</i>	SpPSY2	Spipo8G0020300
<i>Vitis vinifera</i>	VvPSY3	XP_010651361
<i>Zea mays</i>	ZmPSY1	GRMZM2G300348
<i>Zea mays</i>	ZmPSY2	GRMZM2G149317
<i>Zea mays</i>	ZmPSY3	ACG30201