

Table S1. Primer list for expression profiling of PT genes

Genes	Primer sequences	Gene ID
<i>OsGPS</i>	5'-CCCGAAGCTGCTCGGCGTCGACAAGG-3' 5'-GAGCCATCAATTAATGCTGCCTGTAG-3'	Os01g14630
<i>OsGGPS1</i>	5'-AGGCTCCGAGGGCCTAGTCGCCGCCAGGTTGTTG-3' 5'-ATTGCCCAATAACCACTGATGCCTC-3'	Os07g39270
<i>OsGRP</i>	5'-ACGGCCGCACCATCGGCGTCCTGTACCAGCTCGTC-3' 5'-TGCGCTTTGAGCTCCTCTACGATGCC-3'	Os02g44780
<i>OsSPS1</i>	5'-TCGCATATGAATATGGTCGAAACCTGGGTTTAGCC-3' 5'-ATAGGTGCGGTAATGATTCCATGACG-3'	Os06g46450
<i>OsSPS2</i>	5'-CCAGTTCAGAAAGTACCCTTGAGAACGTG-3' 5'-CAAGATGAACTTCTTTGGGAGCTACTAAC-3'	Os05g50550
<i>OsSPS3</i>	5'-ACTGCAATAGAGCTAGTTCATAGAAGTGG-3' 5'-GGAGCTACTGTAAAGCTCACAAGGAGG-3'	Os12g17320
<i>OsSPS4</i>	5'-ACCCCTCAAATGTAGACGCAGCCCTT-3' 5'-CTTGCTCTCAGGAAGAGCATCGATTGCG-3'	Os08g09370
<i>OsFPS1</i>	5'-GATCTGTATAAAGAACTTAATCTGAGGCCG-3' 5'-AACATGAAACAGCTTCTCCATGA-3'	Os01g50760
<i>OsFPS2</i>	5'-AGAGAACTAAACCTAGAGGCGGTC-3' 5'-CTAGAGAAGAAACATGCAACAATGGACAGC-3'	Os05g46580
<i>OsFPS3</i>	5'-AACGAACTTCATCTCCAGCGGGTG-3' 5'-GCCAAGAACCAGAATAATCCACGAGATGCC-3'	Os01g50050
<i>OsFPS4</i>	5'-ACAGGGAGCTTGATCTTCAGGAC-3' 5'-ATCTTCTTCAGAAACGACTTCAAATATCCCG-3'	Os04g56230
<i>OsFPS5</i>	5'-GCTGACAACAATCAAATAGAAGTACTACATAGG-3' 5'-GCATGATCCTTCTGAGCTTCGATAG-3'	Os04g56210
<i>OsTPS19</i>	5'-GCATATACATTTTCGAAGTATCATCAGGGA-3' 5'-GATTTATGTACAAAAGTGAACCTATTTTAAGAT-3'	Os04g27190
<i>OsPSY1</i>	5'-GGGAAGATGATGAGCAGGTTA-3' 5'-GCATTTTCCCTATACATGCT-3'	Os06g51290
<i>OsGA2ox3</i>	5'-ACGTCGCGGACTCGTTGCAGGTTTC-3' 5'-CAGCTGTGGCAATGGTGCAATCCTC-3'	Os01g55240
<i>OsUbi5</i>	5'-GAAGTAAGGAAGGAGGAGGA-3' 5'-AAGGTGTTCAAGTCCAAGG-3'	Os01g22490
<i>OsEF1a</i>	5'-CTGCAGACATGCAAACCACCATTTGAAC-3' 5'-AGGCAAACGGTGGCTGTTGGCGTCATC-3'	Os03g08050

Table S2. Primers for cloning into pDONR221-Kz-*Nde* I-sGFP

Genes	Primer sequences	Product sizes
<i>OsGPS</i>	5'-GTACAAAAAAGCAGGCTCATATGACTTTTCTCTATTTAAACACCATCCCCGACTC-3' 5'-TACAAGAAAGCTGGGTCATATGATGCTGCCTGTAGGCGATGAACCG-3'	1290 bp
<i>OsGGPS1</i>	5'-GTACAAAAAAGCATATGGCTGCCCTTCCCCCGCTCGCCGCTCCCG-3' 5'-AAGCTGGGTCATATGGTTCTGCCGATAGGCAATATAATTGGCCAGGTGCAGAAAGTGGT-3'	1127 bp
<i>OsGRP</i>	5'-GGGGACAAGTTTGCATATGGCTCTCTCCTCTTCCATGTCCCTCCCCTTCG-3' 5'-TTACAAGAAACATATGCGGCGTTGTAGCTGCATCCTGCAGCTCGAATCCCTC-3'	1058 bp
<i>OsSPS1</i>	5'-GTAGTTTGCGGCCGCGCTCGTGCGGGTGGGCTCTCGCGCGGCGCGTC-3' 5'-TCTTAAGCTGCGGCCGCTTTTGTCTAGTGATGACTCTCTCTGTGATG-3'	1320 bp
<i>OsSPS2</i>	5'-AAAAAAGCAGGCTCATATGTTGTCTGTAGCTGCCCAGAGTGT-3' 5'-TACAAGAAAGCTGGGTCATATGGTCAATCCTCTGAAGATTATATTCACCACG-3'	1247 bp
<i>OsSPS3</i>	5'-GCAGGCTCATATGATGGCGGCGCGCTCCTCCCTCGCG-3' 5'-AGCTGGGTCATATGATCAATCCTTCTAGATTATATTTAC-3'	1269 bp
<i>OsSPS4</i>	5'-GGACGGGCTCATATGCTACTGCCGAGGCGTCTTCTCTTCTGTG-3' 5'-AAGCTGGGTCATATGCTTTTGTCTTGTAGAGCTTTTCTGTAAG-3'	1224 bp
<i>OsFPS1</i>	5'-CGCGTAGTGATCATATGGCGGCGGCGGTGGTGGCGAAC-3' 5'-TCTTAAGCTCATATGCTTCTGCCTCTTGTAGATCTTGTGCAGGA-3'	1088 bp
<i>OsFPS2</i>	5'-CGCGTAGTGATCATATGGCGGCGGCGAATGGGAG-3' 5'-GGGCGACGCTCATATGCTTCTGTCTTGTAGATCTTGTG-3'	1095 bp
<i>OsFPS3</i>	5'-CGCGTAGTGATCATATGGCGGCGGCGGTG-3' 5'-GCGGTCTTAAGCTCATATGCTTGCTCCTCTTGTAGATCTTGTG-3'	1101 bp
<i>OsFPS4</i>	5'-ATACCGCGTAGTGATCATATGGGGGCGCTGGCGGCGGAG-3' 5'-TCTTAAGCTCATATGCTTCTTCCTCCTGTAATCTTCTCAGAAACGAC-3'	1095 bp
<i>OsFPS5</i>	5'-AAAAAAGCAGGCTCATATGTCCATGCAGGAGATGCTCCGCATTG-3' 5'-TACAAGAAAGCTGGGTCATATGCTTCTCCTTGTGAATTTCTCAGAAATG-3'	1214 bp

Table S3. The list of plant trans-prenyltransferases analyzed in phylogenetic tree analysis.

Groups	Plant group	Name	Plant Species	Accession No.	Size (aa)
I. GPS/GGPS/GFPS	Dicotyledon /Angiosperm	Am AAS82860	<i>Antirrhinum majus</i>	AAS82860	372
		Am AAS82859	<i>A. majus</i>	AAS82859	297
		At NP195399	<i>Arabidopsis thaliana</i>	NP_195399	371
		At ABE65825	<i>A. thaliana</i>	ABE65825	347
		At AAK00407	<i>A. thaliana</i>	AAK00407	326
		AT3G32040	<i>A. thaliana</i>	AT3G32040	360
		AT3G29430	<i>A. thaliana</i>	AT3G29430	357
		AT3G14510	<i>A. thaliana</i>	AT3G14510	284
		AT3G14550	<i>A. thaliana</i>	AT3G14550	360
		AT3G14530	<i>A. thaliana</i>	AT3G14530	360
		Cr AGL91645	<i>Catharanthus roseus</i>	AGL91645	383
		Cr AGL91646	<i>C. roseus</i>	AGL91646	299
		Cb AAS82870	<i>Clarkia breweri</i>	AAS82870	300
		Ca ABW06960	<i>Corylus avellana</i>	ABW06960	373
		Hb BAF98303	<i>Hevea brasiliensis</i>	BAF98303	306
		Hb BAB60678	<i>H. brasiliensis</i>	BAB60678	370
		Hb BAF98300	<i>H. brasiliensis</i>	BAF98300	306
		HI ACQ90682	<i>Humulus lupulus</i>	ACQ90682	369
		HI ACQ90681	<i>H. lupulus</i>	ACQ90681	279
		Js AIY24421	<i>Jasminum sambac</i>	AIY24421	360
		Mi AFJ52722	<i>Mangifera indica</i>	AFJ52722	328
		Ms ADG01841	<i>Medicago sativa</i>	ADG01841	370
		Mp AAF08793	<i>Mentha x piperita</i>	AAF08793	377
		Mp AAF08792	<i>Mentha x piperita</i>	AAF08792	313
		Nt AFB35651	<i>Nicotiana tabacum</i>	AFB35651	
		Nt NP001312106	<i>N. tabacum</i>	NP_001312106	
		Nt ADD49735	<i>N. tabacum</i>	ADD49735	365
		Sm AEZ55680	<i>Salvia miltiorrhiza</i>	AEZ55680	331
		Sm AEZ55681	<i>S. miltiorrhiza</i>	AEZ55681	344
		Sm ACR19637	<i>S. miltiorrhiza</i>	ACR19637	346
		Sm AEZ55682	<i>S. miltiorrhiza</i>	AEZ55682	346
		Sm AEZ55683	<i>S. miltiorrhiza</i>	AEZ55683	379
		Sm AEZ55678	<i>S. miltiorrhiza</i>	AEZ55678	314
		Sm AEZ55679	<i>S. miltiorrhiza</i>	AEZ55679	290
		Sa CAA67330	<i>Sinapis alba</i>	CAA67330	366
		Sl ABB82554	<i>Solanum lycopersicum</i>	ABB82554	365
		Sl ABB82555	<i>S. lycopersicum</i>	ABB82555	363
		Vv CAO38946	<i>Vitis vinifera</i>	CAO38946	298
		Vv CAO64763	<i>V. vinifera</i>	CAO64763	341
	Gymosperm	Ag AAN01133	<i>Abies grandis</i>	AAN01133	383
		Ag AAN01134	<i>A. grandis</i>	AAN01134	381
		Ag AAN01135	<i>A. grandis</i>	AAN01135	387
		Eu ACO59905	<i>Elaeagnus umbellata</i>	ACO59905	365
		Gb AAQ72786	<i>Ginkgo biloba</i>	AAQ72786	391
		Jc ADD82422	<i>Jatropha curcas</i>	ADD82422	370
		Pa ACA21458	<i>Picea abies</i>	ACA21458	386
		Pa ACZ57571	<i>P. abies</i>	ACZ57571	383
		Pm AGU43761	<i>Pinus massoniana</i>	AGU43761	380
		Tm AAS67008	<i>Taxus x media</i>	AAS67008	393
	Monocotyledon /Angiosperm	Hv BAJ94484	<i>Hordeum vulgare</i>	BAJ94484	358
		Hv BAJ96219	<i>H. vulgare</i>	BAJ96219	342
		Os BAT02334	<i>Oryza sativa</i>	BAT02334	366
		Os XP015626863	<i>O. sativa</i>	XP_015626863	342
		Os BAS71331	<i>O. sativa</i>	BAS71331	416
		Sb XP021311468	<i>Sorghum bicolor</i>	XP_021311468	366
		Sb XP002463084	<i>S. bicolor</i>	XP_002463084	371
		Sb XP002452775	<i>S. bicolor</i>	XP_002452775	342

II. SPS/PPS

		Ta SPT17215	<i>Triticum aestivum</i>	SPT17215	356
		Ta BT009222	<i>T. aestivum</i>	BT009222	345
		Zm ABQ85648	<i>Zea mays</i>	ABQ85648	363
		Zm NP001183930	<i>Z. mays</i>	NP_001183930	367
		Zm XP008678927	<i>Z. mays</i>	XP_008678927	342
II. SPS/PPS	Dicotyledon /Angiosperm	At ABF58968	<i>Arabidopsis thaliana</i>	ABF58968	406
		At ABI54337	<i>A. thaliana</i>	ABI54337	417
		At AAW39025	<i>A. thaliana</i>	AAW39025	422
		Hb BAF98298	<i>H.brasiliensis</i>	BAF98298	330
		Hb ABD92707	<i>H.brasiliensis</i>	ABD92707	418
		Mi AFJ52721	<i>M. indica</i>	AFJ52721	421
		Nt AHL84161	<i>N. tabacum</i>	AHL84161	415
		Sm AEZ55677	<i>S. miltiorrhiza</i>	AEZ55677	424
		Sl ABB88703	<i>S. lycopersicum</i>	ABB88703	415
		Sl ABI63627	<i>S. lycopersicum</i>	ABI63627	398
		Cu AAN86061	<i>Citrus unshiu</i>	AAN86061	426
		Vv CAO17862	<i>V. vinifera</i>	CAO17862	422
	Gymosperm	Pa ACA21459	<i>P. abies</i>	ACA21459	427
		Qr CAC20852	<i>Quercus robur</i>	CAC20852	416
	Monocotyledon /Angiosperm	Hv BAK05302	<i>H. vulgare</i>	BAK05302	424
		Hv BAK00672	<i>Hordeum vulgare</i>	BAK00672	394
		Os BAS99121	<i>O. sativa</i>	BAS99121	430
		Os Q75HZ9	<i>O. sativa</i>	Q75HZ9	403
		Os XP015620200	<i>O. sativa</i>	XP_015620200	414
		Os XP015648843	<i>O. sativa</i>	XP_015648843	412
		Sb XP002438852	<i>S. bicolor</i>	XP_002438852	431
		Sb XP021321875	<i>S. bicolor</i>	XP_021321875	489
		Sb XP021321027	<i>S. bicolor</i>	XP_021321027	395
		Ta AK334813	<i>T. aestivum</i>	AK334813	426
		Ta BT009280	<i>T. aestivum</i>	BT009280	402
		Ta AK331526	<i>T. aestivum</i>	AK331526	402
		Zm XP008643450	<i>Z. mays</i>	XP_008643450	428
		Zm NP001347618	<i>Z. mays</i>	NP_001347618	424
II. SPS/PPS	Dicotyledon /Angiosperm	At AAL34286	<i>A. thaliana</i>	AAL34286	385
		At CAB80990	<i>A. thaliana</i>	CAB80990	342
		At AAB07248	<i>A. thaliana</i>	AAB07248	342
		Aa ADJ67472	<i>Artemisia annua</i>	ADJ67472	343
		As AAP74719	<i>Artemisia spiciformis</i>	AAP74719	342
		Br XP009128999	<i>Brassica rapa</i>	XP_009128999	387
		Ca CAA59170	<i>Capsicum annuum</i>	CAA59170	347
		Cr ADO95193	<i>C. roseus</i>	ADO95193	345
		Cl AFW98433	<i>Chrysanthemum lavandulifolium</i>	AFW98433	344
		Cs XP006474825	<i>Citrus sinensis</i>	XP_006474825	342
		Cm XP008463060	<i>Cucumis melo</i>	XP_008463060	342
		Hb AAM98379	<i>H. brasiliensis</i>	AAM98379	342
		Hi BAB40665	<i>H. lupulus</i>	BAB40665	342
		La AGQ04160	<i>Lavandula angustifolia</i>	AGQ04160	349
		Md AAM08927	<i>Malus x domestica</i>	AAM08927	342
		Mi AFJ52720	<i>M. indica</i>	AFJ52720	342
		Ms ADC32809	<i>M. sativa</i>	ADC32809	342
		Mt XP003594327	<i>Medicago truncatula</i>	XP_003594327	342
		Mp AAK63847	<i>Mentha x piperita</i>	AAK63847	349
		Nt AHM22931	<i>N. tabacum</i>	AHM22931	341
		Pg AAY87903	<i>Panax ginseng</i>	AAY87903	342
		Pn AAY53905	<i>Panax notoginseng</i>	AAY53905	343
		Pq ADJ68004	<i>Panax quinquefolius</i>	ADJ68004	342
		Sm ABV08819	<i>S. miltiorrhiza</i>	ABV08819	349
		Sl NP001234068	<i>S. lycopersicum</i>	NP_001234068	342

III. FPS	Gymosperm	Vv AAX76910	<i>V. vinifera</i>	AAX76910	341
		Gb AAR27053	<i>Ginkgo biloba</i>	AAR27053	390
		Pa ACA21460	<i>P. abies</i>	ACA21460	347
		Tm AAS19931	<i>Taxus media</i>	AAS19931	351
		Ao ADV03674	<i>Alisma orientale</i>	ADV03674	343
		Ap ADR83704	<i>Alisma plantago-aquatica</i>	ADR83704	343
	Monocotyledon /Angiosperm	Hc AER12202	<i>Hedychium coccineum</i>	AER12202	356
		Cg AFP19446	<i>Cymbidium goeringii</i>	AFP19446	348
		Do AFX68799	<i>Dendrobium officinale</i>	AFX68799	348
		Hv BAJ84778	<i>H. vulgare</i>	BAJ84778	355
		Hv BAJ90047	<i>H. vulgare</i>	BAJ90047	352
		Hv BAJ87514	<i>H. vulgare</i>	BAJ87514	408
		LI ADZ57167	<i>Lilium longiflorum</i>	ADZ57167	351
		OI AHA51120	<i>Ornithogalum longebracteatum</i>	AHA51120	347
		Os BAS73911	<i>O. sativa</i>	BAS73911	353
		Os BAS95151	<i>O. sativa</i>	BAS95151	355
		Os BAS73843	<i>O. sativa</i>	BAS73843	307
		Os MT793647	<i>O. sativa</i>	MT793647	354
		Os BAS91413	<i>O. sativa</i>	BAS91413	392
		Pd XP008792798	<i>Phoenix dactylifera</i>	XP_008792798	350
		Sb XP002456217	<i>S. bicolor</i>	XP_002456217	356
		Sb XP002441458	<i>S. bicolor</i>	XP_002441458	353
		Sb XP021319712	<i>S. bicolor</i>	XP_021319712	405
		Ta AFV51836	<i>T. aestivum</i>	AFV51836	354
		Ta AGC11812	<i>T. aestivum</i>	AGC11812	351
		Ta AK330255	<i>T. aestivum</i>	AK330255	410
		Zm ACR35378	<i>Z. mays</i>	ACR35378	355
		Zm ACF88176	<i>Z. mays</i>	ACF88176	350

Table S4. The list of plant trans-prenyltransferases analyzed in multiple sequence alignment.

Groups	Protein ID	Plant Species	Accession No.	Subgroups	Size (aa)
Group-I	AT4G36810_A	<i>Arabidopsis thaliana</i>	AT4G36810	A	371
	Mp AAF08793_A	<i>Mentha x piperita</i>	AAF08793	A	377
	OsGGPS1_A	<i>Oryza sativa</i>	BAT02334	C	366
	Zm NP001183930_A	<i>Zea mays</i>	NP001183930	C	367
	Sb XP002463084_A	<i>Sorghum bicolor</i>	XP002463084	C	371
	Hv BAJ94484_A	<i>Hordeum vulgare</i>	BAJ94484	C	358
	Ta SPT17215_A	<i>Triticum aestivum</i>	SPT17215	C	356
	AT3G14550_B	<i>A. thaliana</i>	AT3G14550	B	360
	AT3G29430_B	<i>A. thaliana</i>	AT3G29430	B	357
	AT1G49530_C	<i>A. thaliana</i>	AT1G49530	E	336
	AT2G18640_C	<i>A. thaliana</i>	AT2G18640	E	372
	OsGPS_C	<i>O. sativa</i>	BAS71331	E	416
	Zm ABQ85648_C	<i>Zea mays</i>	ABQ85648	E	363
	Sb XP021311468_C	<i>S. bicolor</i>	XP021311468	E	366
	AgAAN01133_D	<i>Abies grandis</i>	AAN01133	D	383
	PaACA21458_D	<i>Picea abies</i>	ACA21458	D	386
	Mp AAF08792_E	<i>M. x piperita</i>	AAF08792	G	313
	OsGRP_F	<i>O. sativa</i>	XP015626863	F	342
	Zm XP008678927_F	<i>Zea mays</i>	XP008678927	F	342
	Sb XP002452775_F	<i>S. bicolor</i>	XP002452775	F	342
	Hv BAJ96219_F	<i>H. vulgare</i>	BAJ96219	F	342
	Ta BT009222_F	<i>T. aestivum</i>	BT009222	F	345
	AT4G38460_F	<i>A. thaliana</i>	AT4G38460	F	326
Group-II	OsSPS3_A	<i>O. sativa</i>	XP015620200	A	414
	Sb XP021321875_A	<i>S. bicolor</i>	XP021321875	A	489
	OsSPS2_A	<i>O. sativa</i>	Q75HZ9	A	403
	Hv BAK00672_A	<i>H. vulgare</i>	BAK00672	A	394
	Ta BT009280_A	<i>T. aestivum</i>	BT009280	A	402
	Zm NP001347618_A	<i>Zea mays</i>	NP001347618	A	424
	At ABF58968_A	<i>A. thaliana</i>	ABF58968	A	406
	At ABI54337_A	<i>A. thaliana</i>	ABI54337	A	417
	OsSPS4_B	<i>O. sativa</i>	XP015648843	B	412
	Sb XP021321027_B	<i>S. bicolor</i>	XP021321027	B	395
	At AAW39025_B	<i>A. thaliana</i>	AAW39025	B	422
	Zm XP008643450_B	<i>Zea mays</i>	XP008643450	B	428
	Sb XP002438852_B	<i>S. bicolor</i>	XP002438852	B	431
	Hv BAK05302_B	<i>H. vulgare</i>	BAK05302	B	424
	Ta AK334813_B	<i>T. aestivum</i>	AK334813	B	426
	OsSPS1_B	<i>O. sativa</i>	BAS99121	B	430
Group-III	Hv BAJ87514_A	<i>H. vulgare</i>	BAJ87514	A	408
	Ta AK330255_A	<i>T. aestivum</i>	AK330255	A	410
	OsFPS4_A	<i>O. sativa</i>	MT793647	A	354
	OsFPS5_A	<i>O. sativa</i>	BAS91413	A	392
	Sb XP021319712_A	<i>S. bicolor</i>	XP021319712	A	405
	OsFPS3_A	<i>O. sativa</i>	XP_015621770	A	356
	Hv BAJ84778_A	<i>H. vulgare</i>	BAJ84778	A	355
	Ta AFV51836_A	<i>T. aestivum</i>	AFV51836	A	354
	Sb XP002456217_A	<i>S. bicolor</i>	XP002456217	A	356
	OsFPS1_A	<i>O. sativa</i>	BAS73911	A	353
	Zm ACR35378_A	<i>Zea mays</i>	ACR35378	A	355
	Zm ACF88176_A	<i>Zea mays</i>	ACF88176	A	350
	Sb XP002441458_A	<i>S. bicolor</i>	XP002441458	A	353
	Hv BAJ90047_A	<i>H. vulgare</i>	BAJ90047	A	352
	Ta AGC11812_A	<i>T. aestivum</i>	AGC11812	A	351
	OsFPS2_A	<i>O. sativa</i>	BAS95151	A	355
	At AAL34286_B	<i>A. thaliana</i>	AAL34286	B	385
	At CAB80990_B	<i>A. thaliana</i>	CAB80990	B	342
	Nt AHM22931_B	<i>Nicotiana tabacum</i>	AHM22931	B	341
	Sm ABV08819_B	<i>S. bicolor</i>	ABV08819	B	349

Table S5. The differential amino acid residues of 'three floors' motifs in the families of Group-I, II and III.

Groups		Proteins	Floor1			Floor2			Floor3		
			Site 1	Site 2	Site 3	Site 1	Site 2	Site 3	Site 1	Site 2	Site 3
Group-I		AT4G36810_A	M	S	L	I	L	I	A	F	L
		Mp AAF08793_A	M	S	L	I	L	I	A	F	L
		OsGGPS1_A	M	S	L	V	L	I	A	F	L
		Zm NP001183930_A	M	S	L	V	L	I	A	F	L
		Sb XP002463084_A	M	S	L	V	L	I	A	F	L
		Hv BAJ94484_A	M	S	L	V	L	I	A	F	L
		Ta SPT17215_A	M	S	L	V	L	I	A	F	L
		AT3G14550_B	S	S	L	I	L	I	A	F	L
		AT3G29430_B	S	S	L	I	L	I	A	F	L
		AT1G49530_C	A	S	L	I	R	V	A	V	M
		AT2G18640_C	M	S	L	I	L	I	A	F	L
		OsGPS_C	M	S	V	I	H	S	A	F	L
		Zm ABQ85648_C	A	S	I	I	L	A	A	F	L
		Sb XP021311468_C	A	S	I	M	L	A	A	F	L
		AgAAN01133_D	M	S	V	I	L	I	A	F	L
		PaACA21458_D	M	S	V	I	L	T	A	F	I
		Mp AAF08792_E	A	A	M	V	V	G	A	F	I
		OsGRP_F	A	S	M	L	F	V	A	Y	L
		Zm XP008678927_F	A	S	M	L	F	V	A	Y	L
		Sb XP002452775_F	A	S	M	L	F	V	A	Y	L
		Hv BAJ96219_F	A	S	M	L	F	V	A	Y	L
		Ta BT009222_F	A	S	M	L	F	V	A	Y	L
		AT4G38460_F	A	S	M	V	F	V	A	F	I
Group-II		OsSPS3_A	T	A	F	I	F	I	A	-	I
		Sb XP021321875_A	T	A	F	I	F	I	A	-	I
		OsSPS2_A	T	A	F	I	F	I	A	-	I
		Hv BAK00672_A	T	A	F	I	F	I	A	-	I
		Ta BT009280_A	T	A	F	I	F	I	A	-	I
		Zm NP001347618_A	T	A	F	I	F	I	A	-	I
		At ABF58968_A	T	A	F	I	F	I	A	-	I
		At ABI54337_A	T	A	F	I	F	I	G	-	I
		OsSPS4_B	V	T	L	I	L	V	A	-	L
		Sb XP021321027_B	I	S	L	I	L	V	A	-	L
		At AAW39025_B	V	A	L	I	L	V	A	-	L
		Zm XP008643450_B	V	A	L	I	L	V	A	-	M
		Sb XP002438852_B	V	A	L	I	L	V	A	-	M
		Hv BAK05302_B	V	A	L	I	L	V	A	-	M
		Ta AK334813_B	V	A	L	I	L	V	A	-	M
		OsSPS1_B	V	A	L	I	L	V	A	-	M

Group-III

Hv BAJ87514_A	S	A	-	L	L	T	G	V	I
Ta AK330255_A	S	A	-	L	L	T	G	V	I
OsFPS4_A	S	A	-	L	L	T	G	V	I
OsFPS5_A	C	A	-	F	L	T	G	I	I
Sb XP021319712_A	C	A	-	F	L	T	G	I	I
OsFPS3_A	Y	F	-	L	L	T	G	I	V
Hv BAJ84778_A	Y	F	-	L	L	T	G	I	V
Ta AFV51836_A	Y	F	-	L	L	T	G	I	V
Sb XP002456217_A	Y	F	-	L	L	T	G	I	V
OsFPS1_A	Y	F	-	L	L	T	G	I	V
Zm ACR35378_A	Y	F	-	L	L	T	G	I	V
Zm ACF88176_A	F	F	-	L	L	T	G	I	V
Sb XP002441458_A	F	F	-	L	L	T	G	I	V
Hv BAJ90047_A	F	F	-	L	L	T	G	I	V
Ta AGC11812_A	F	F	-	L	L	T	G	I	V
OsFPS2_A	Y	F	-	L	L	T	G	I	V
At AAL34286_B	Y	F	-	L	L	T	G	I	V
At CAB80990_B	Y	F	-	L	L	T	G	I	V
Nt AHM22931_B	Y	F	-	L	L	T	G	I	V
Sm ABV08819_B	Y	F	-	L	L	T	G	I	V

Table S6. Spatial and temporal expression of rice *trans*-PT genes.

Gene Names	Seedling stage		Vegitative stage				Reproductive stage			Seed
	L	R	6L	6R	9L	9R	<u>L</u>	<u>R</u>	<u>F</u>	<i>Se</i>
OsGPS	0.003 ± 0.001	0.008 ± 0.004	0.001 ± 0.000	0.001 ± 0.000	0.012 ± 0.001	0.001 ± 0.000	0.029 ± 0.004	0.002 ± 0.000	0.003 ± 0.001	0.006 ± 0.001
OsGGPS1	0.050 ± 0.005	0.007 ± 0.000	0.102 ± 0.002	0.018 ± 0.001	0.019 ± 0.001	0.003 ± 0.001	0.019 ± 0.001	0.006 ± 0.001	0.007 ± 0.001	0.009 ± 0.001
OsGRP	0.020 ± 0.002	0.010 ± 0.001	0.176 ± 0.007	0.022 ± 0.002	0.028 ± 0.001	0.004 ± 0.000	0.03 ± 0.002	0.009 ± 0.002	0.01 ± 0.003	0.019 ± 0.003
OsSPS1	0.013 ± 0.000	0.010 ± 0.001	0.02 ± 0.001	0.017 ± 0.000	0.006 ± 0.001	0.005 ± 0.001	0.005 ± 0.000	0.006 ± 0.000	0.004 ± 0.000	0.013 ± 0.001
OsSPS2	0.093 ± 0.003	0.013 ± 0.000	0.021 ± 0.001	0.007 ± 0.000	0.481 ± 0.010	0.003 ± 0.000	0.116 ± 0.001	0.01 ± 0.001	0.043 ± 0.002	0.029 ± 0.001
OsSPS3	0.007 ± 0.001	0.004 ± 0.000	0.011 ± 0.000	0.037 ± 0.002	0.012 ± 0.001	0.002 ± 0.000	0.01 ± 0.001	0.004 ± 0.000	0.005 ± 0.000	0.015 ± 0.001
OsSPS4	0.044 ± 0.005	0.006 ± 0.001	0.025 ± 0.004	0.000 ± 0.000	0.07 ± 0.004	0.000 ± 0.000	0.03 ± 0.001	0.003 ± 0.000	0.005 ± 0.000	0.011 ± 0.002
OsFPS1	0.235 ± 0.009	0.039 ± 0.004	0.074 ± 0.001	0.032 ± 0.001	0.602 ± 0.031	0.026 ± 0.000	0.594 ± 0.071	0.033 ± 0.005	0.151 ± 0.02	0.074 ± 0.007
OsFPS2	0.054 ± 0.006	0.107 ± 0.007	0.016 ± 0.000	0.204 ± 0.011	0.014 ± 0.001	0.126 ± 0.003	0.015 ± 0.001	0.082 ± 0.001	0.048 ± 0.003	0.024 ± 0.002
OsFPS3	0.021 ± 0.002	0.013 ± 0.001	0.06 ± 0.002	0.017 ± 0.000	0.322 ± 0.011	0.005 ± 0.000	0.228 ± 0.008	0.007 ± 0.001	0.060 ± 0.007	0.073 ± 0.010
OsFPS4	0.033 ± 0.002	0.000 ± 0.000	0.032 ± 0.000	0.000 ± 0.000	0.149 ± 0.005	0.000 ± 0.000	0.054 ± 0.001	0.000 ± 0.000	0.003 ± 0.000	0.000 ± 0.000

All data are expressed as the mean values ± standard error from three technical replicates. The expression levels of the above genes are presented as ΔCq values. L, leaves; R, roots; F, florets; Se, seeds harvested at 40 days after flowering.

Table S7. Expression profiles of rice *trans* -PT genes in MeJA, ABA and GA-treated rice leaves.

†Chemicals	Gene Names	‡ $\Delta\text{Cq} \pm \text{SE}$	Fold change ($2^{-\Delta\Delta\text{Ct}} \pm \text{SE}$)					
			0	0.5	1	2	4	6 (hpt)
<u>Mock</u>	<i>OsGPS</i>	0.004 $\pm$ 0.000	0.990 $\pm$ 0.460	0.779 $\pm$ 0.203	1.264 $\pm$ 0.728	1.223 $\pm$ 0.169	0.858 $\pm$ 0.168	
	<i>OsGGPS1</i>	0.004 $\pm$ 0.000	0.754 $\pm$ 0.141	1.047 $\pm$ 0.046	1.281 $\pm$ 0.069	0.915 $\pm$ 0.036	0.845 $\pm$ 0.087	
	<i>OsGRP</i>	0.036 $\pm$ 0.001	0.767 $\pm$ 0.080	0.803 $\pm$ 0.059	0.974 $\pm$ 0.091	0.681 $\pm$ 0.023	0.728 $\pm$ 0.093	
	<i>OsSPS1</i>	0.011 $\pm$ 0.001	0.91 $\pm$ 0.068	0.909 $\pm$ 0.058	0.983 $\pm$ 0.034	0.926 $\pm$ 0.038	0.910 $\pm$ 0.010	
	<i>OsSPS2</i>	0.082 $\pm$ 0.011	0.877 $\pm$ 0.014	1.072 $\pm$ 0.091	0.911 $\pm$ 0.109	1.079 $\pm$ 0.088	0.739 $\pm$ 0.049	
	<i>OsSPS3</i>	0.043 $\pm$ 0.002	0.851 $\pm$ 0.022	1.026 $\pm$ 0.133	1.354 $\pm$ 0.206	1.012 $\pm$ 0.071	0.817 $\pm$ 0.027	
	<i>OsSPS4</i>	0.024 $\pm$ 0.001	0.875 $\pm$ 0.059	0.959 $\pm$ 0.078	0.953 $\pm$ 0.054	1.24 $\pm$ 0.059	0.919 $\pm$ 0.103	
	<i>OsFPS1</i>	0.448 $\pm$ 0.006	0.959 $\pm$ 0.140	0.931 $\pm$ 0.074	0.745 $\pm$ 0.030	0.845 $\pm$ 0.016	0.744 $\pm$ 0.138	
	<i>OsFPS2</i>	0.196 $\pm$ 0.008	0.787 $\pm$ 0.025	0.793 $\pm$ 0.100	0.780 $\pm$ 0.025	0.869 $\pm$ 0.061	0.831 $\pm$ 0.099	
	<i>OsFPS3</i>	0.090 $\pm$ 0.010	0.950 $\pm$ 0.041	0.946 $\pm$ 0.015	0.783 $\pm$ 0.055	0.979 $\pm$ 0.078	0.642 $\pm$ 0.011	
	<i>OsFPS4</i>	0.085 $\pm$ 0.010	0.862 $\pm$ 0.070	0.883 $\pm$ 0.037	0.688 $\pm$ 0.012	0.948 $\pm$ 0.079	0.667 $\pm$ 0.007	
<u>MeJA</u>	<i>OsGPS</i>	0.002 $\pm$ 0.000	2.425 $\pm$ 0.358	10.715 $\pm$ 1.520	30.635 $\pm$ 6.379	6.070 $\pm$ 0.294	7.634 $\pm$ 2.851	
	<i>OsGGPS1</i>	0.002 $\pm$ 0.000	0.996 $\pm$ 0.016	1.876 $\pm$ 0.053	0.815 $\pm$ 0.025	2.558 $\pm$ 0.093	2.156 $\pm$ 0.197	
	<i>OsGRP</i>	0.025 $\pm$ 0.003	0.900 $\pm$ 0.121	0.749 $\pm$ 0.039	0.831 $\pm$ 0.055	0.712 $\pm$ 0.086	0.624 $\pm$ 0.039	
	<i>OsSPS1</i>	0.004 $\pm$ 0.000	0.774 $\pm$ 0.000	1.885 $\pm$ 0.190	1.668 $\pm$ 0.047	1.603 $\pm$ 0.029	0.999 $\pm$ 0.055	
	<i>OsSPS2</i>	0.076 $\pm$ 0.002	1.297 $\pm$ 0.046	1.176 $\pm$ 0.146	0.605 $\pm$ 0.032	0.651 $\pm$ 0.073	0.601 $\pm$ 0.069	
	<i>OsSPS3</i>	0.037 $\pm$ 0.005	1.283 $\pm$ 0.138	0.786 $\pm$ 0.123	0.401 $\pm$ 0.083	0.447 $\pm$ 0.050	0.460 $\pm$ 0.012	
	<i>OsSPS4</i>	0.022 $\pm$ 0.001	1.060 $\pm$ 0.076	0.741 $\pm$ 0.009	0.713 $\pm$ 0.027	0.77 $\pm$ 0.083	0.618 $\pm$ 0.042	
	<i>OsFPS1</i>	0.218 $\pm$ 0.010	1.204 $\pm$ 0.086	2.713 $\pm$ 0.129	2.086 $\pm$ 0.050	1.655 $\pm$ 0.032	1.166 $\pm$ 0.104	
	<i>OsFPS2</i>	0.104 $\pm$ 0.013	0.712 $\pm$ 0.060	1.118 $\pm$ 0.016	0.961 $\pm$ 0.073	0.768 $\pm$ 0.407	0.731 $\pm$ 0.104	
	<i>OsFPS3</i>	0.032 $\pm$ 0.001	1.146 $\pm$ 0.263	2.316 $\pm$ 0.235	0.870 $\pm$ 0.145	0.507 $\pm$ 0.070	0.818 $\pm$ 0.045	
	<i>OsFPS4</i>	0.027 $\pm$ 0.004	0.983 $\pm$ 0.060	0.424 $\pm$ 0.150	0.129 $\pm$ 0.03	0.196 $\pm$ 0.020	0.164 $\pm$ 0.031	
<u>ABA</u>	<i>OsGPS</i>	0.000 $\pm$ 0.000	0.814 $\pm$ 0.054	0.730 $\pm$ 0.086	0.422 $\pm$ 0.019	0.295 $\pm$ 0.050	0.771 $\pm$ 0.369	
	<i>OsGGPS1</i>	0.004 $\pm$ 0.000	1.108 $\pm$ 0.111	0.833 $\pm$ 0.131	1.775 $\pm$ 0.270	1.279 $\pm$ 0.092	0.924 $\pm$ 0.073	
	<i>OsGRP</i>	0.035 $\pm$ 0.003	0.596 $\pm$ 0.037	0.572 $\pm$ 0.015	0.937 $\pm$ 0.114	0.833 $\pm$ 0.038	0.603 $\pm$ 0.010	
	<i>OsSPS1</i>	0.006 $\pm$ 0.000	1.193 $\pm$ 0.446	0.690 $\pm$ 0.070	1.290 $\pm$ 0.143	1.231 $\pm$ 0.152	0.650 $\pm$ 0.331	
	<i>OsSPS2</i>	0.102 $\pm$ 0.004	0.969 $\pm$ 0.028	0.927 $\pm$ 0.043	1.748 $\pm$ 0.135	2.528 $\pm$ 0.282	1.755 $\pm$ 0.161	
	<i>OsSPS3</i>	0.034 $\pm$ 0.002	0.753 $\pm$ 0.042	0.838 $\pm$ 0.078	1.136 $\pm$ 0.160	1.042 $\pm$ 0.069	0.631 $\pm$ 0.130	
	<i>OsSPS4</i>	0.015 $\pm$ 0.001	0.579 $\pm$ 0.197	0.580 $\pm$ 0.100	1.299 $\pm$ 0.180	0.789 $\pm$ 0.021	0.571 $\pm$ 0.286	
	<i>OsFPS1</i>	0.388 $\pm$ 0.023	0.547 $\pm$ 0.049	0.578 $\pm$ 0.018	1.234 $\pm$ 0.059	1.389 $\pm$ 0.074	0.751 $\pm$ 0.041	
	<i>OsFPS2</i>	0.141 $\pm$ 0.014	0.849 $\pm$ 0.072	0.759 $\pm$ 0.062	0.922 $\pm$ 0.036	0.689 $\pm$ 0.024	0.582 $\pm$ 0.052	
	<i>OsFPS3</i>	0.043 $\pm$ 0.005	0.801 $\pm$ 0.051	0.781 $\pm$ 0.054	2.052 $\pm$ 0.191	2.435 $\pm$ 0.049	1.702 $\pm$ 0.233	
	<i>OsFPS4</i>	0.034 $\pm$ 0.004	1.039 $\pm$ 0.064	0.888 $\pm$ 0.093	1.675 $\pm$ 0.093	1.561 $\pm$ 0.069	0.968 $\pm$ 0.041	
<u>GA</u>	<i>OsGPS</i>	0.001 $\pm$ 0.000	0.832 $\pm$ 0.224	0.601 $\pm$ 0.170	0.355 $\pm$ 0.134	0.247 $\pm$ 0.076	0.603 $\pm$ 0.190	
	<i>OsGGPS1</i>	0.026 $\pm$ 0.001	1.153 $\pm$ 0.044	1.287 $\pm$ 0.093	0.955 $\pm$ 0.046	1.033 $\pm$ 0.166	0.903 $\pm$ 0.043	
	<i>OsGRP</i>	0.018 $\pm$ 0.001	1.307 $\pm$ 0.083	1.308 $\pm$ 0.148	1.059 $\pm$ 0.102	1.195 $\pm$ 0.097	1.013 $\pm$ 0.109	
	<i>OsSPS1</i>	0.007 $\pm$ 0.000	1.326 $\pm$ 0.024	1.554 $\pm$ 0.069	1.171 $\pm$ 0.03	1.413 $\pm$ 0.18	1.073 $\pm$ 0.066	
	<i>OsSPS2</i>	0.149 $\pm$ 0.013	1.075 $\pm$ 0.058	1.093 $\pm$ 0.032	0.801 $\pm$ 0.068	0.929 $\pm$ 0.103	0.685 $\pm$ 0.035	
	<i>OsSPS3</i>	0.050 $\pm$ 0.003	0.684 $\pm$ 0.028	0.693 $\pm$ 0.008	0.591 $\pm$ 0.056	0.669 $\pm$ 0.044	0.538 $\pm$ 0.031	
	<i>OsSPS4</i>	0.013 $\pm$ 0.000	1.021 $\pm$ 0.069	0.808 $\pm$ 0.056	0.688 $\pm$ 0.076	0.562 $\pm$ 0.023	0.521 $\pm$ 0.042	
	<i>OsFPS1</i>	0.209 $\pm$ 0.026	1.354 $\pm$ 0.094	1.118 $\pm$ 0.084	1.167 $\pm$ 0.126	0.765 $\pm$ 0.009	0.991 $\pm$ 0.151	
	<i>OsFPS2</i>	0.101 $\pm$ 0.001	0.939 $\pm$ 0.064	1.117 $\pm$ 0.075	1.044 $\pm$ 0.081	1.165 $\pm$ 0.060	1.106 $\pm$ 0.342	
	<i>OsFPS3</i>	0.023 $\pm$ 0.001	1.128 $\pm$ 0.011	1.040 $\pm$ 0.087	1.014 $\pm$ 0.087	0.641 $\pm$ 0.037	0.770 $\pm$ 0.072	
	<i>OsFPS4</i>	0.023 $\pm$ 0.001	1.374 $\pm$ 0.104	1.200 $\pm$ 0.094	1.174 $\pm$ 0.220	0.874 $\pm$ 0.034	1.016 $\pm$ 0.102	

All data are expressed as the mean values $\pm$ standard error from three technical replicates. The expression levels of the above genes are presented as ΔCq values for 0 hour-post chemical treatment (hpt), and as the fold change values ($2^{-\Delta\Delta\text{Ct}}$) relative to it for other time-series samples (¶). ABA, 100 μM abscisic acid; GA, 100 μM gibberellic acid; MeJA, 100 μM methyl jasmonic acid; Mock, treated only with buffer.

Figure S1

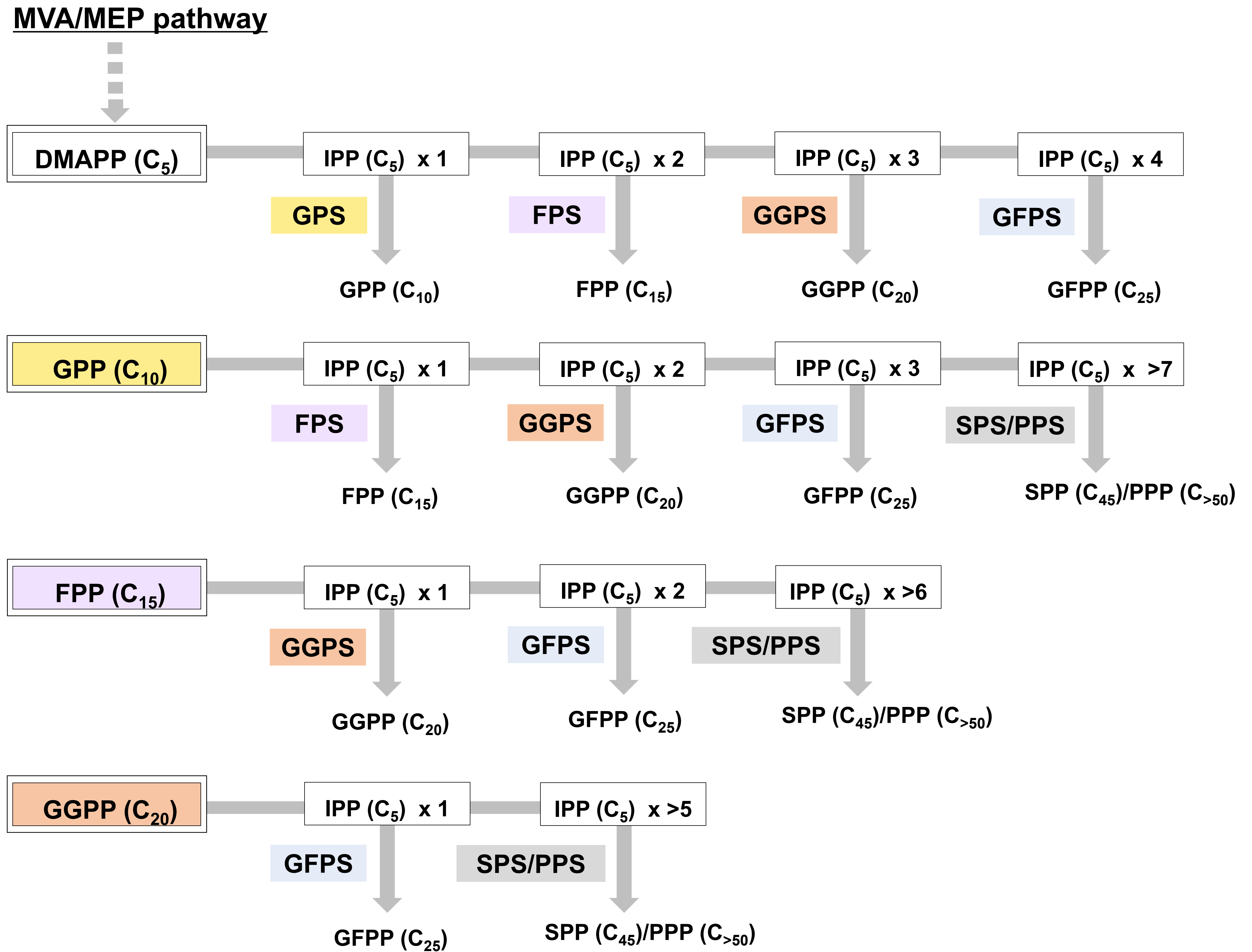


Figure S2

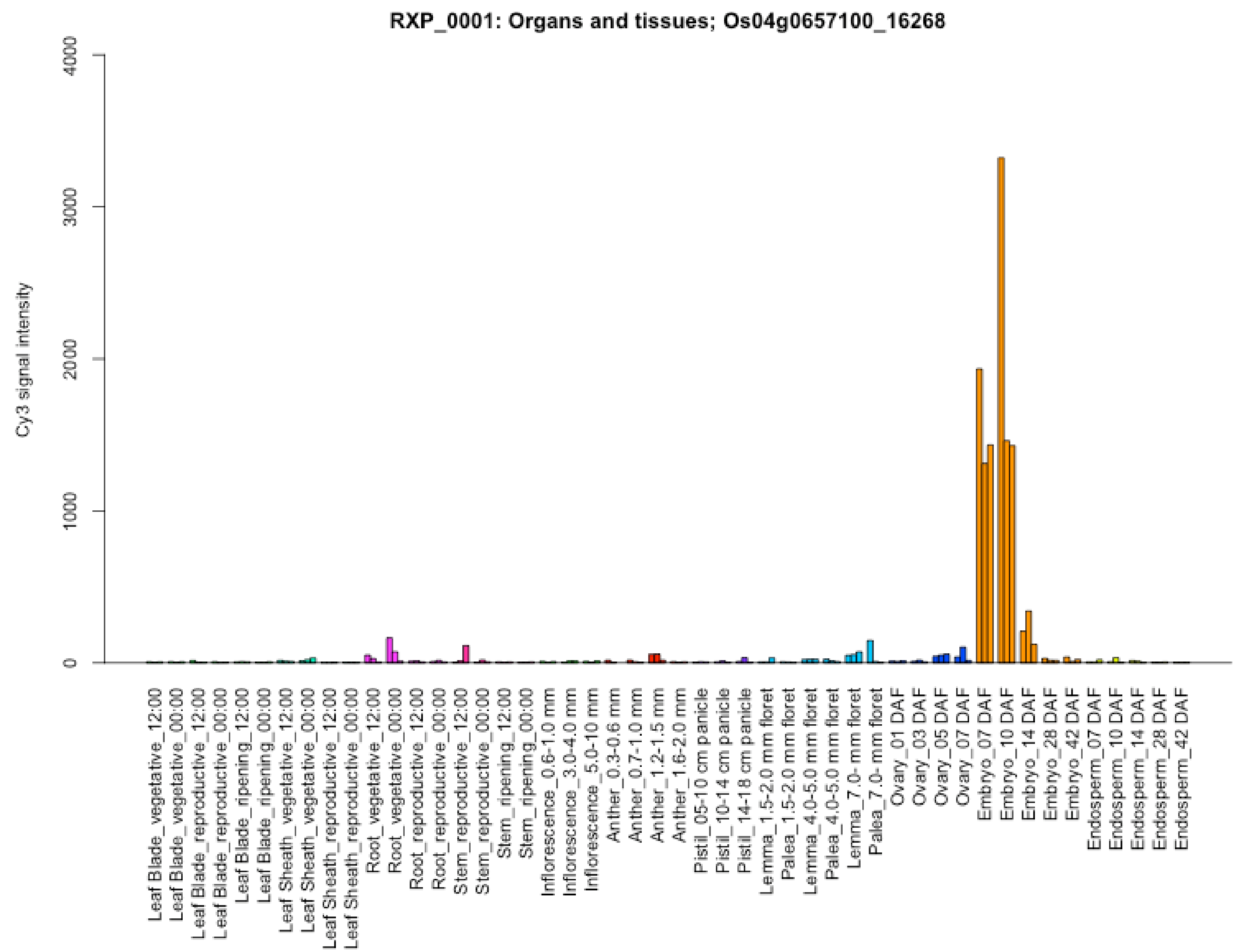


Figure S3

