

Table S1. Class, species and NCBI accession number of all the TDP1 α sequences present in this study.

Class	Species	NCBI Accession
Eudicots	<i>M. truncatula</i>	XP_003622687
Eudicots	<i>C. arietinum</i>	XP_012568966
Eudicots	<i>A. precatorius</i>	XP_027361208
Eudicots	<i>C. cajan</i>	KYP67403
Eudicots	<i>G. max</i>	XP_006578130
Eudicots	<i>G. soja</i>	KHN29597
Eudicots	<i>V. radiata</i>	XP_014520570
Eudicots	<i>M. pruriens</i>	RDX62056
Eudicots	<i>Q. suber</i>	XP_023920145
Eudicots	<i>C. clementina</i>	XP_024046807
Eudicots	<i>C. sinensis</i>	XP_006467985
Eudicots	<i>M. esculenta</i>	XP_021599995
Eudicots	<i>T. orientale</i>	PON85342
Eudicots	<i>J. curcas</i>	XP_012091409
Eudicots	<i>H. brasiliensis</i>	XP_021642094
Eudicots	<i>M. notabilis</i>	EXB31386
Eudicots	<i>V. vinifera</i>	RVW45926
Eudicots	<i>P. andersonii</i>	PON39438
Eudicots	<i>P. avium</i>	XP_021821508
Eudicots	<i>S. oleracea</i>	XP_021836412
Eudicots	<i>G. arboreum</i>	KHG26217
Eudicots	<i>P. persica</i>	XP_020416746
Eudicots	<i>R. communis</i>	XP_015574204
Eudicots	<i>C. eugenioides</i>	XP_027163996
Eudicots	<i>R. chinensis</i>	XP_024159806
Eudicots	<i>C. arabica</i>	XP_027105045
Eudicots	<i>Z. jujuba</i>	XP_015883785
Eudicots	<i>A. chinensis</i>	PSS04715
Eudicots	<i>H. umbratica</i>	XP_021294271
Eudicots	<i>C. pepo</i>	XP_023544483
Eudicots	<i>C. moschata</i>	XP_022950185
Eudicots	<i>S. pennellii</i>	XP_015067766
Eudicots	<i>C. maxima</i>	XP_022978030
Eudicots	<i>N. attenuata</i>	OIT34941
Eudicots	<i>C. cardunculus</i>	XP_024983894
Eudicots	<i>S. lycopersicum</i>	XP_010317667
Eudicots	<i>D. zibethinus</i>	XP_022720581
Eudicots	<i>P. trichocarpa</i>	XP_006383945
Eudicots	<i>M. charantia</i>	XP_022142241
Eudicots	<i>H. annuus</i>	XP_022015799
Eudicots	<i>L. sativa</i>	XP_023743532
Eudicots	<i>A. lyrata</i>	XP_020879079
Eudicots	<i>B. napus</i>	XP_013728150
Eudicots	<i>E. salsugineum</i>	XP_006400034

Table S1. Cont.

Class	Species	NCBI Accession
Eudicots	<i>A. annua</i>	PWA63244
Eudicots	<i>M. cordata</i>	OVA11144
Eudicots	<i>A. thaliana</i>	ACO60340
Eudicots	<i>C. rubella</i>	XP_006290125
Eudicots	<i>M. domestica</i>	XP_008384030
Eudicots	<i>F. vesca</i>	XP_011459955
Eudicots	<i>B. rapa</i>	XP_009131446
Eudicots	<i>C. papaya</i>	XP_021887357
Eudicots	<i>G. raimondii</i>	XP_012456873
Eudicots	<i>T. cacao</i>	XP_007025983
Eudicots	<i>E. grandis</i>	XP_010052433
Eudicots	<i>S. tuberosum</i>	XP_006343414
Eudicots	<i>C. sativus</i>	XP_011658164
Lycophita	<i>S. moellendorffii</i>	XP_002970738
Bryophyta	<i>P. patens</i>	XP_024385825
Ancestral	<i>A. trichopoda</i>	XP_020517687
Monocots	<i>A. comosus</i>	OAY67291
Monocots	<i>P. hallii</i>	XP_025800030
Monocots	<i>S. italica</i>	XP_022683988
Monocots	<i>A. officinalis</i>	XP_020256587
Monocots	<i>T. urartu</i>	EMS46186
Monocots	<i>S. bicolor</i>	XP_021309892
Monocots	<i>D. catenatum</i>	XP_020688319
Monocots	<i>Z. mays</i>	XP_008651694
Monocots	<i>A. tauschii</i>	XP_020162379
Monocots	<i>B. distachyon</i>	XP_024313659
Monocots	<i>P. equestris</i>	XP_020589644
Monocots	<i>O. sativa</i>	XP_015646620
Monocots	<i>P. dactylifera</i>	XP_026664181
Monocots	<i>A. shenzhenica</i>	PKA57825
Monocots	<i>D. oligosanthos</i>	OEL28790
Gymnosperm	<i>P. sylvestris</i>	PSY00009297
Gymnosperm	<i>T. baccata</i>	TBA00005746
Algae	<i>C. sorokiniana</i>	PRW59620
Algae	<i>M. conductrix</i>	PSC74986
Algae	<i>C. subellipsoidea</i>	EIE25781
Algae	<i>T. socialis</i>	PNH10367
Fungi	<i>S. cerevisiae</i>	KZV13308
Animals	<i>H. glaber</i>	EHB09657
Animals	<i>H. sapiens</i>	AAI07878
Animals	<i>C. picta bellii</i>	XP_008163939
Animals	<i>D. rerio</i>	XP_700174
Animals	<i>X. tropicalis</i>	CAJ81457
Animals	<i>C. brachyrrhynchos</i>	KFO56089

Table S2. Class, species and NCBI accession number of all the TDP1 β sequences present in this study.

Class	Species	NCBI Accession
Eudicots	<i>M. truncatula</i>	AET04910
Eudicots	<i>T. pratense</i>	PNY07045
Eudicots	<i>M. pruriens</i>	RDX75863
Eudicots	<i>T. orientale</i>	PON97503
Eudicots	<i>P. andersonii</i>	PON71257
Eudicots	<i>A. chinensis</i>	PSR89388
Eudicots	<i>G. arboreum</i>	KHG24729
Eudicots	<i>R. chinensis</i>	PRQ16808
Eudicots	<i>C. follicularis</i>	GAV73409
Eudicots	<i>R. communis</i>	EEF51660
Eudicots	<i>T. subterraneum</i>	GAU25446
Eudicots	<i>M. esculenta</i>	XP_021614780
Eudicots	<i>P. trichocarpa</i>	XP_024438691
Eudicots	<i>G. max</i>	XP_006584680
Eudicots	<i>P. persica</i>	XP_020418919
Eudicots	<i>M. domestica</i>	XP_008356812
Eudicots	<i>F. vesca</i>	XP_011470841
Eudicots	<i>A. thaliana</i>	OAO91221
Eudicots	<i>A. lyrata</i>	XP_020876114
Eudicots	<i>C. rubella</i>	XP_023637563
Eudicots	<i>B. rapa</i>	XP_009125687
Eudicots	<i>G. raimondii</i>	XP_012467165
Eudicots	<i>T. cacao</i>	XP_007038197
Eudicots	<i>C. sinensis</i>	XP_006485048
Eudicots	<i>E. grandis</i>	XP_010065187
Eudicots	<i>V. vinifera</i>	XP_010644043
Eudicots	<i>S. tuberosum</i>	XP_006341694
Eudicots	<i>S. lycopersicum</i>	XP_025885954
Monocots	<i>S. bicolor</i>	XP_002446388
Monocots	<i>Z. mays</i>	ONM62577
Monocots	<i>S. italica</i>	RCV33451
Monocots	<i>P. halli</i>	XP_025826012
Monocots	<i>O. sativa</i>	XP_015635430
Monocots	<i>B. distachyon</i>	XP_010239843
Lycophita	<i>S. moellendorffii</i>	XP_002993511
Ancestral	<i>A. trichopoda</i>	XP_011623559

Table S3. Accession numbers for *TDP1 α* and *TDP1 β* genes retrieved from Phytozome v12.1 (<https://phytozome.jgi.doe.gov/>) and used to acquire the gene expression data from BAR Toronto eFP browser (<http://bar.utoronto.ca/eplant>).

Species	<i>TDP1α</i>	<i>TDP1β</i>
<i>Selaginella moellendorffii</i>	Smo170833	Smo415650
<i>Zea mays</i>	GRMZM2G080174	GRMZM2G069856
<i>Oryza sativa</i>	LOC_Os07g34598	LOC_Os04g33050
<i>Medicago truncatula</i>	Medtr7g050860	Medtr8g095490
<i>Glycine max</i>	Glyma.04G064300	Glyma.08G005800
<i>Solanum lycopersicum</i>	Solyc03g031820.2	Solyc03g117960.2
<i>Solanum tuberosum</i>	PGSC0003DMG400024073	PGSC0003DMG400014226

Table S4. Logo sequence, E-value, number of sites and width for each motif found by MEME5.0 in TDP1 α sequences.

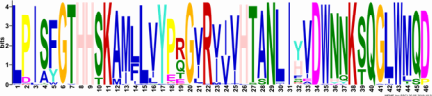
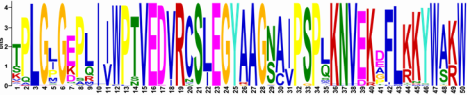
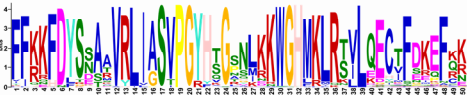
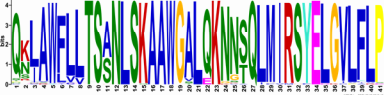

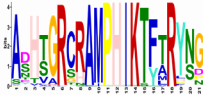
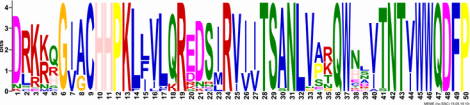
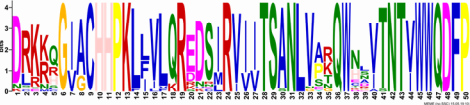
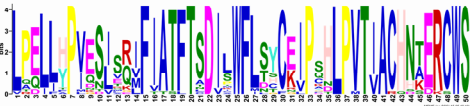
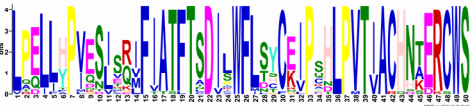
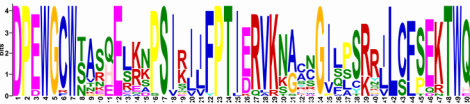
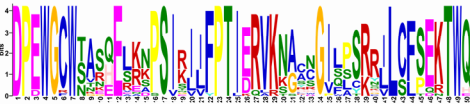
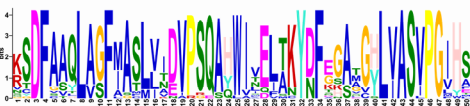
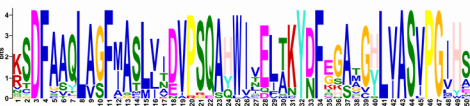
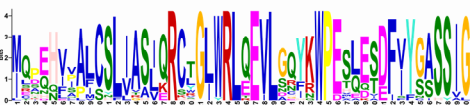
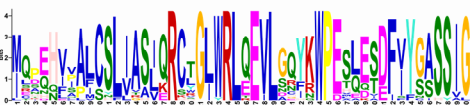




	Motifs TDP1 alpha	E-value	Sites	Width
1.		3.8e-3023	69	46
2.		4.7e-2742	61	50
3.		6.3e-2726	69	50
4.		6.8e-2648	69	41
5.		1.1e-2634	62	50
6.		8.0e-1196	68	21

Table S5. Logo sequence, E-value, number of sites and width for each motif found by MEME5.0 in TDP1 β sequences.

Motifs TDP1 beta	E-value	Sites	Width
 <p>1. </p>	1.1e-1062	26	50
 <p>2. </p>	1.4e-981	26	50
 <p>3. </p>	6.1e-917	26	50
 <p>4. </p>	1.0e-874	26	50
 <p>5. </p>	9.4e-849	26	50
 <p>6. </p>	2.0e-516	26	29
 <p>7. </p>	1.7e-436	26	21