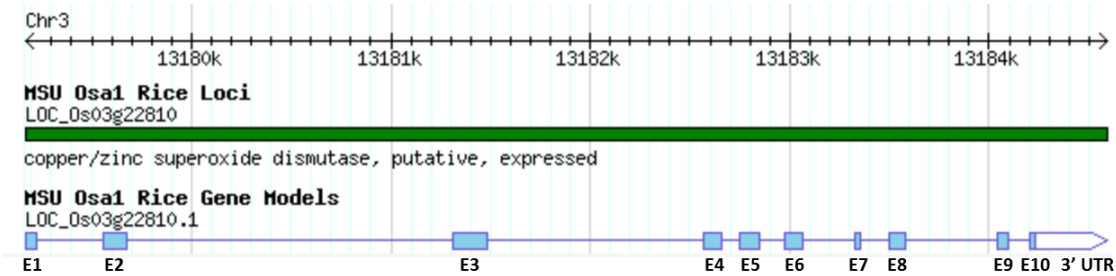
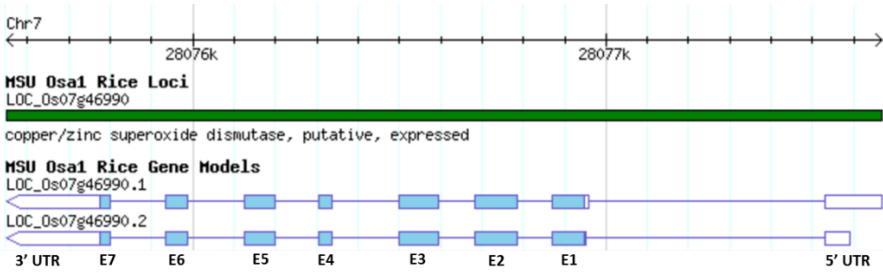


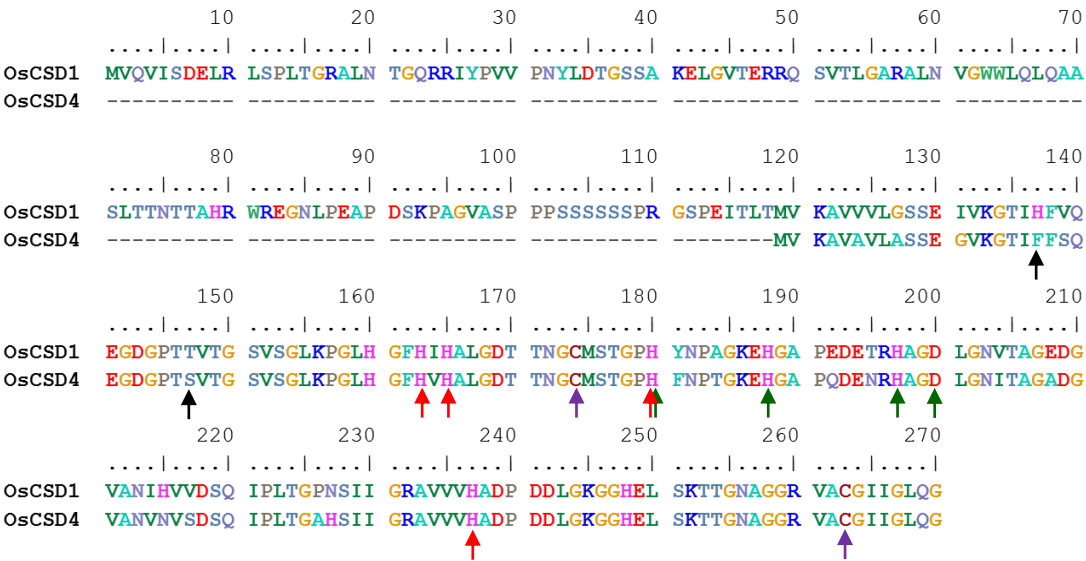
Supplementary Figure 1: Predicted gene structure organization of *loci* encoding two rice cytosolic CuZn Superoxide dismutase (*CSD*) genes as per Rice Genome Annotation Project database (<http://rice.uga.edu>). (A) LOC_Os03g22810 (*OsCSD1*), (B) LOC_Os07g46990 (*OsCSD4*). Regions corresponding to the exons/coding regions (blue boxes, indicated by 'E'), introns (connecting lines), and UTRs (white boxes) are indicated. Scale on the top indicates the chromosomal coordinates. (C) Sequence alignment of the RGAP predicted amino acid sequences of *OsCSD1* and *OsCSD4*. Predicted *OsCSD1* is 270 AA long, while *OsCSD4* is 152 AA long (length variation: 118 AA). Important residues are indicated by different coloured arrows: co-ordination with Cu²⁺ (red) and co-ordination with Zn²⁺ (green), intra-subunit disulfide bond (purple), variations at subunit interaction interface (black).



(A)

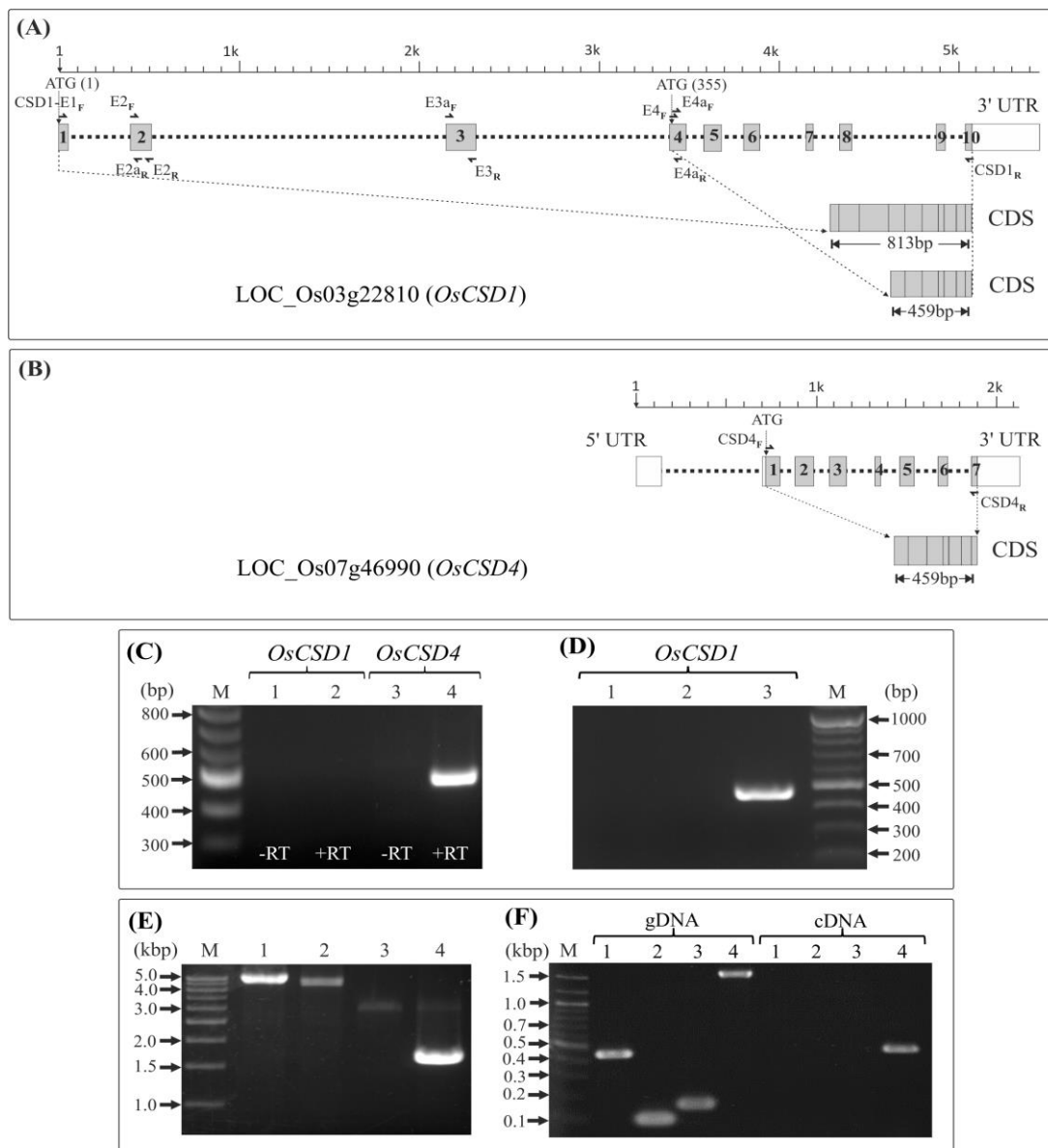


(B)



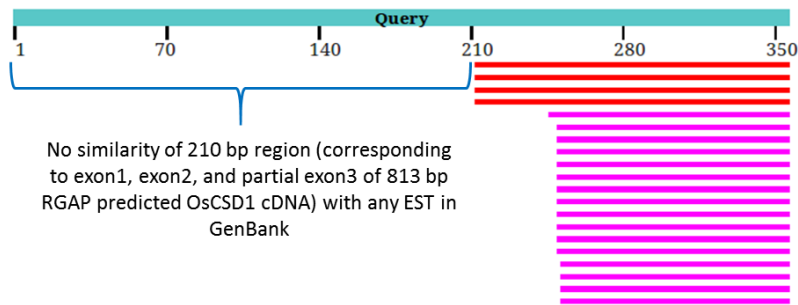
(C)

Supplementary Figure 2: Schematic representation of RGAP-predicted gene structures (exon-intron-UTR organization) of rice cytosolic *CSD* genes: (A) of LOC_Os03g22810 (*OsCSD1*) and (B) LOC_Os07g46990 (*OsCSD4*). Exons (grey boxes), introns (thick dashed line), UTRs (white boxes), and start codons (ATG) in the *OsCSD1* (w.r.t. cDNA) and *OsCSD4* genes are shown along with length of the coding region. Positions of various forward and reverse oligonucleotide primers used for PCR amplification of FL-cDNAs (RGAP predicted) and individual exons are also shown. (C-F): PCR amplification of *OsCSD1* and *OsCSD4* FL-cDNA, and validation of exon organization of RGAP predicted *OsCSD1* gene. (C) FL-cDNA amplification of *OsCSD1* (primers: CSD1-E1_F + CSD1_R) and *OsCSD4* (primers: CSD4_F and CSD4_R) in '+RT' (with reverse transcriptase) and '-RT' control (without reverse transcriptase) samples. (D) PCR amplification of different *OsCSD1* cDNA regions, exon1-10 (lane 1, primers: CSD1-E1_F + CSD1_R), exon1-4 (lane 2, primers: CSD1-E1_F + CSD-E4_{aR}) and exon4-10 (lane 3, primers: CSD1-E4_{aF} + CSD1_R). (E) PCR amplification of *OsCSD1* regions using genomic DNA template and different primers: CSD1-E1_F + CSD1_R (lane 1), CSD1-E2_F + CSD1_R (lane 2), CSD1-E3_{aF} + CSD1_R (lane 3), CSD1-E4_F + CSD1_R (lane 4). (F) PCR amplification of *OsCSD1* exon/ exon-combinations with genomic DNA (left panel) or cDNA templates (right panel), and different primers: CSD1-E1_F + CSD1-E2_{aR} (lane 1); CSD1-E2_F + CSD1-E2_R (lane 2); CSD1-E3_{aF} + CSD1-3_R (lane 3); CSD1-E4_F + CSD1_R (lane 4). Lane M indicates DNA markers, 100 bp ladder (Figure B, D, F) and 500 bp ladder (Figure E).



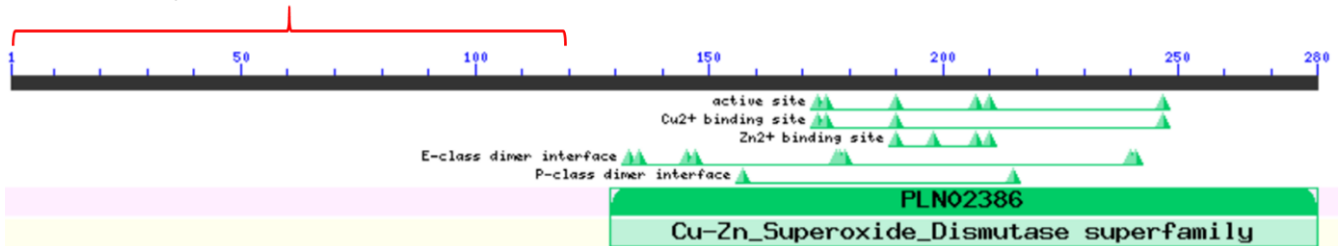
Supplementary Figure 3: Database search analysis of cDNA region (and encoded amino acid sequence) of the region corresponding to exon1, exon2, exon3, and exon4 (till ATG at 355) of the RGAP predicted *OsCSD1* gene structure. (A) Top hits obtained in 'Blastn' search of the *OsCSD1* 1-354 bp cDNA region. No similarity observed in region 1-210 bp with any available EST. (B) Results of conserved domain analysis (at CDD-Blast, NCBI) of RGAP predicted *OsCSD1* protein sequence (length: 270 AA). No conserved domains detected in the N-terminal 118 AA region of *OsCSD1*. (C) Schematic representation of location of SAGE Tags and microarray probes (Affymetrix and Agilent) along the length of RGAP predicted *OsCSD1* gene structure. No Tags/probes are designed/used in exon1-exon4 region.

Schematic representation of distribution of top 20 Blast hits

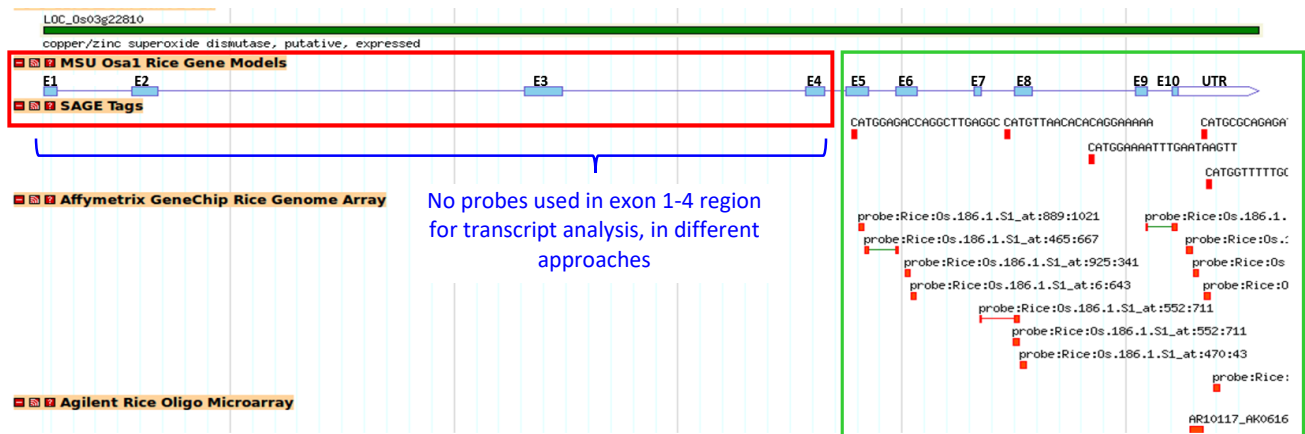


(A)

No conserved domains detected in N-Ter 118 amino acid region encoded by exon1, exon2, exon3 and partial exon4 region predicted at RGAP database

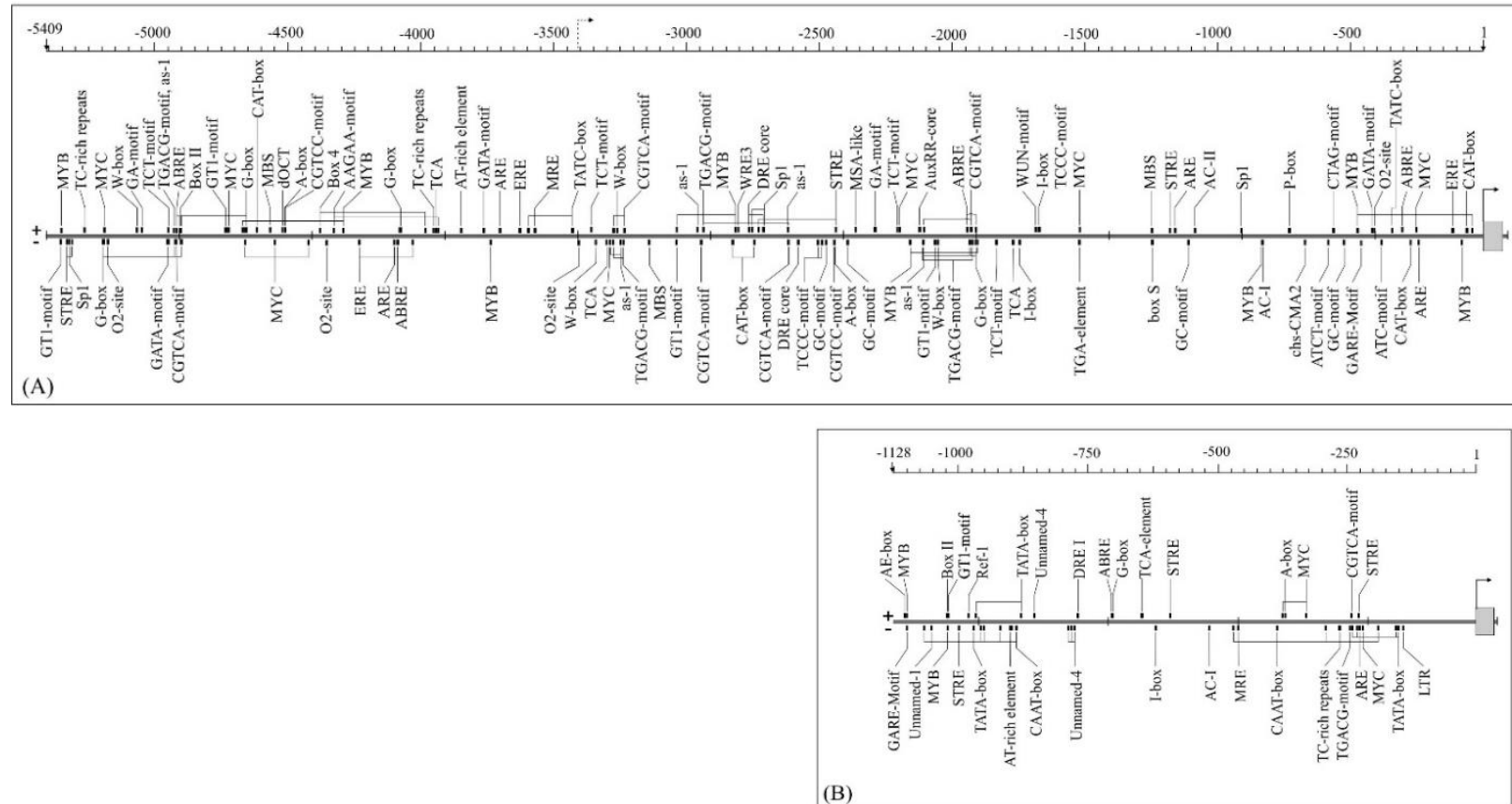


(B)

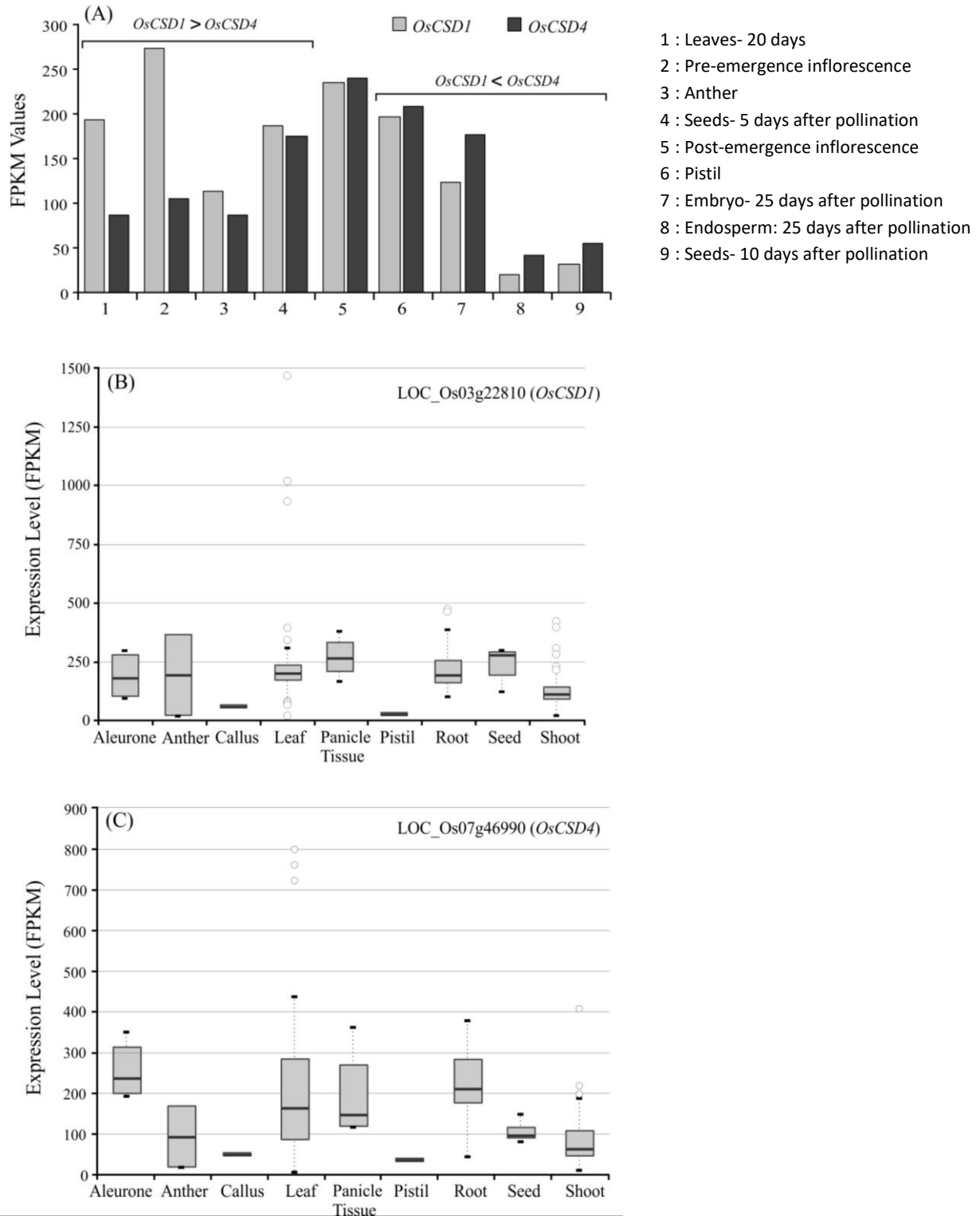


(C)

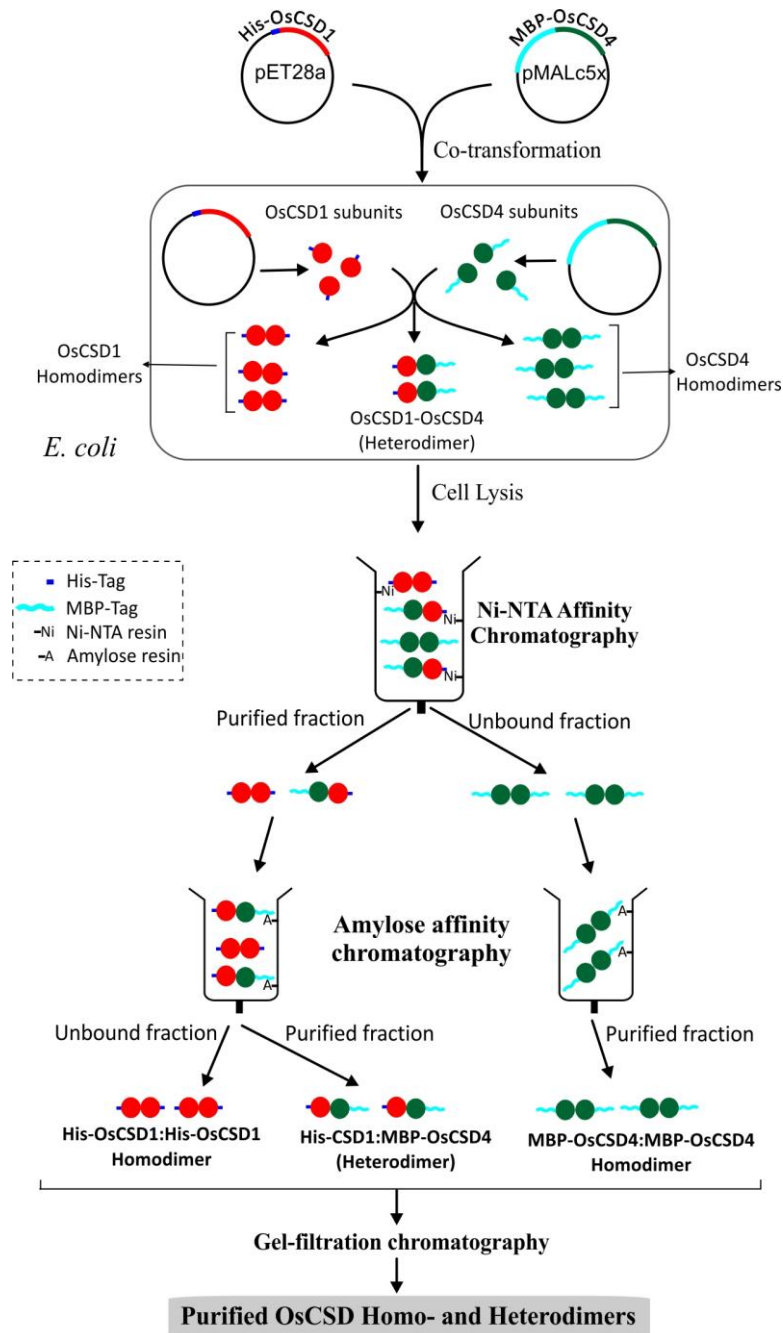
Supplementary Figure 4: Locations of relative positions of the cis- regulatory elements in the upstream region of rice cytosolic CSD genes, (A) *OsCSD1* and (B) *OsCSD4*. Analysis of *cis*-elements was carried at PlantCARE database (<http://bioinformatics.psb.ugent.be/webtools/plantcare/html>). Scale at the top is indicative of relative positions of *cis*-elements relative to the translation start site (+1), and '+' and '-' indicates the plus and minus strands, respectively. Positions of common promoter elements (TATA, CAAT etc.) and unnamed motifs are not indicated.



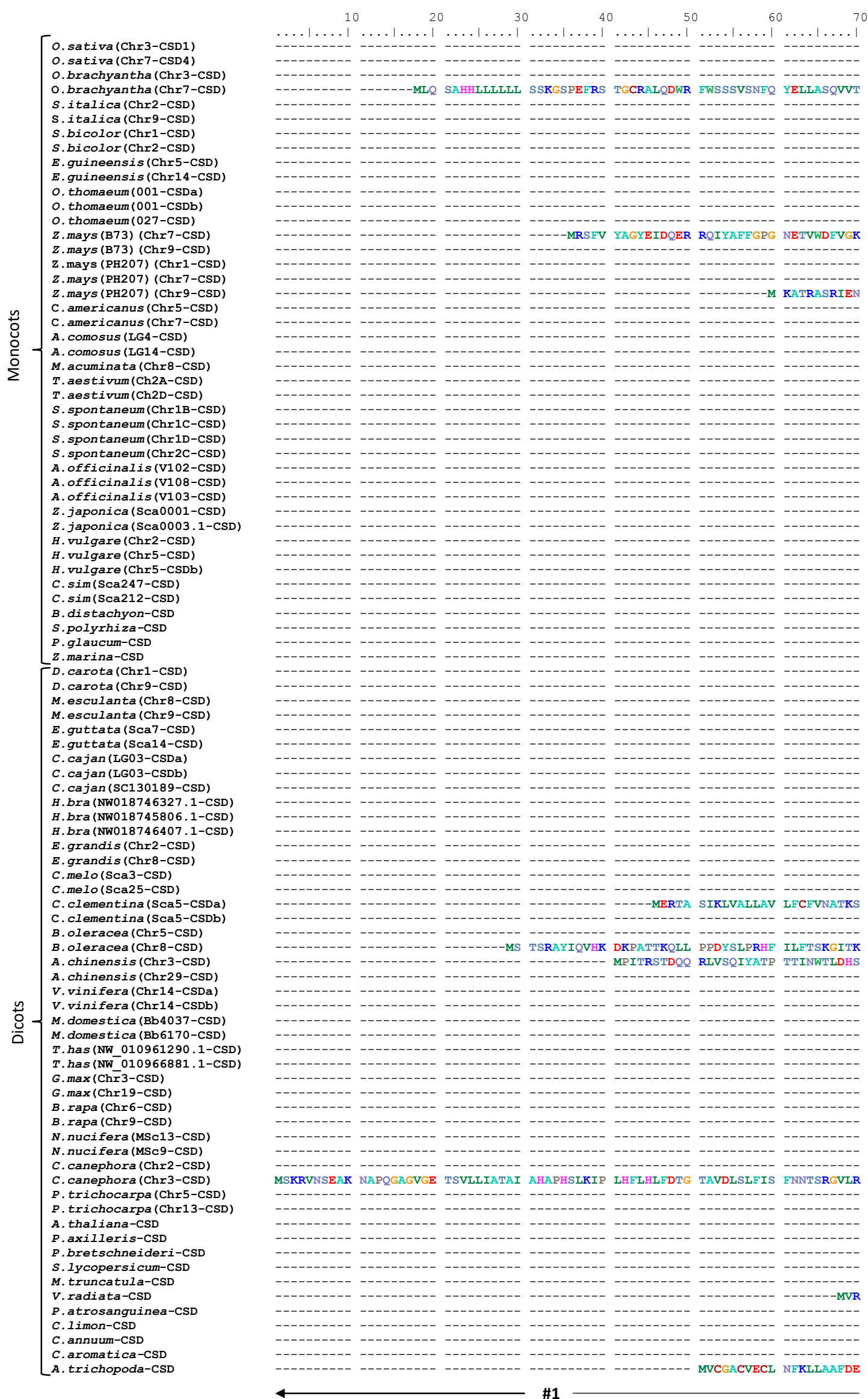
Supplementary Figure 5: Relative transcript levels of two rice cytosolic CSDs, *OsCSD1* and *OsCSD4*: (A) Transcript levels of *OsCSD1* and *OsCSD4* in different rice tissues/developmental stages as per RGAP database (<http://rice.uga.edu>). (B-C) Expression level of *OsCSD1* and *OsCSD4* transcripts in different tissues/developmental stages as per rice expression database (RED, <http://expression.ic4.org>). FPKM: Fragments per kilo base per million mapped reads.



Supplementary Figure 6: Schematic representation of approach for co-expression and isolation of homodimeric and heterodimeric subunit configurations of OsCSD1 and OsCSD4. His-tagged OsCSD1 (cloned in pET28a plasmid, kanamycin selection marker) and MBP-tagged OsCSD4/OsCSD1 (cloned in pMALc5x, ampicillin selection marker) were co-transformed in *E. coli* SHuffle T7 Express host and over-expressed. Cells were lysed and homodimers (His-OsCSD1:OsCSD1, MBP-OsCSD4:MBP-OsCSD4) and heterodimer (His-OsCSD1:MBP-OsCSD4) subunit configurations were isolated and purified by combination of affinity (Ni-NTA and Amylose based) and gel-filtration purification methods. For convenience different colour codes are used for the two affinity tags (His: dark blue; MBP: light blue-green) and OsCSDs (OsCSD1: red; OsCSD4: green).



Supplementary Figure 7: Multiple sequence alignment (MSA) of 92 cytosolic CuZn SODs (monocots: 1-43, dicots: 44-92) retrieved from the PLAZA web resource for monocot (https://bioinformatics.psb.ugent.be/plaza/versions/plaza_v4_5_monocots/) and dicots (https://bioinformatics.psb.ugent.be/plaza/versions/plaza_v4_5_dicots/). MSA was carried out using ClustalX software (Thompson et al., 1997) using default gap opening and gap extension penalties, followed by alignment editing by BioEdit Software (Hall, 1999). The name of the species is followed by genomic location (chromosome/linkage group/scaffold etc.) in the parenthesis. For convenience, the duplicated sequences (due to block/tandem duplication) in a genome are arranged next each other. Regions (#1- #15) with length variations are indicated below the alignment. (*Note: C. sim*, *C. simplicifolius*; *H. bra*, *H. brasiliensis*; *T. has*, *T. hassleriana*).



Monocots

Dicots

	80	90	100	110	120	130	140
							
<i>O. sativa</i> (Chr3-CSD1)	---MVKAVV	VLG---SSE	IVKGTIHFVQ	-----	EGD-GPTTVT	GSVSGLKPGL	
<i>O. sativa</i> (Chr7-CSD4)	---MVKAVA	VLA---SSE	GVKGTIFFFQ	-----	EGD-GPTSVT	GSVSGLKPGL	
<i>O. brachyantha</i> (Chr3-CSD)	---MVKAVV	VLG---SSD	TVKGTISFVQ	-----	EGD-GPTTVS	GSVSGLKPGL	
<i>O. brachyantha</i> (Chr7-CSD)	NTETMVKAVA	VLA---SSE	GVKGTIFFFQ	-----	EGD-GTTTVT	GSVSGLRPGL	
<i>S. italica</i> (Chr2-CSD)	---MVKAVA	VLA---GSD	-VKGTIFFFSQ	-----	EGD-GPTTVT	GSISGLKPGL	
<i>S. italica</i> (Chr9-CSD)	---MVKAVV	VLG---SSE	GVKGTIYFTQ	-----	EGD-GPTTVT	GSVSGLKPGL	
<i>S. bicolor</i> (Chr1-CSD)	---MVKAVA	VLG---SSE	GVKGTIFFFQ	-----	EGD-GPTTVT	GSVSGLKPGL	
<i>S. bicolor</i> (Chr2-CSD)	---MVKGVA	VLA---GPD	-VKGTIFFFSQ	-----	EGD-GPTTVT	GSISGLKPGL	
<i>E. guineensis</i> (Chr5-CSD)	---MVKGVA	VLG---CSE	GVKGTIVYFTQ	-----	EGD-GPTTVA	GSLSGLKPGL	
<i>E. guineensis</i> (Chr14-CSD)	---MVKAVA	VLG---GSE	GVKGTIVYFTQ	-----	EGD-GPTTVT	GSLSGLKPGL	
<i>O. thomaeum</i> (001-CSDa)	---MVKAVA	VLG---SSE	GVKGTIFFFQ	-----	EGD-GPTTVT	GSVSGVKPGL	
<i>O. thomaeum</i> (001-CSDb)	---MVKAVA	VLG---SSE	GVKGTIFFFQ	-----	EGD-GPTTVT	GSVSGLKPGL	
<i>O. thomaeum</i> (027-CSD)	---MI---	-----	-----	-----	---GPTTVT	GSISGLKPGL	
<i>Z. mays</i> (B73) (Chr7-CSD)	ITETMVKAVA	VLA---GTD	-VKGTIFFFSQ	-----	EGD-GPTTVT	GSISGLKPGL	
<i>Z. mays</i> (B73) (Chr9-CSD)	---MVKAVA	VLG---SSD	GVKGTIFFFQ	-----	EGD-GPTAVT	GSVSGLKPGL	
<i>Z. mays</i> (PH207) (Chr1-CSD)	---MVKAVA	VLG---SSD	GVKGTIFFFQ	-----	VGD-GPTTVT	GSISGLKPGL	
<i>Z. mays</i> (PH207) (Chr7-CSD)	---MVKAVA	VLA---GTD	-VKGTIFFFSQ	-----	EGD-GPTTVT	GSISGLKPGL	
<i>Z. mays</i> (PH207) (Chr9-CSD)	QDAIDTAIVG	MLADPKEACT	GIQGVHFLPF	NPIDKRTALT	YIDSDGKMCC	VSK-GPTAVT	GSVSGLKPGL
<i>C. americanus</i> (Chr5-CSD)	---MVKAVV	VLA---SSE	GVKGTIHFQ	-----	EGD-GPTTVT	GSVSGLKPGL	
<i>C. americanus</i> (Chr7-CSD)	---MAKAVA	VLA---GGD	-VKGTIFFFQ	-----	EGD-GPTTVT	GSISGLKPGL	
<i>A. comosus</i> (LG4-CSD)	---MGKAVA	VLQ---SNE	GVKGTIYFTQ	-----	EGH-GPTTVT	GSISGLKPGL	
<i>A. comosus</i> (LG14-CSD)	---MVNAVA	VLG---SNE	GVKGTIYFTQ	-----	EGD-GPTTVT	GSISGLKPGL	
<i>M. acuminata</i> (Chr8-CSD)	---MVKAVA	VLG---GTE	GVGGVIYFQ	-----	EGN-GPTMVN	GNISGLSPGL	
<i>T. aestivum</i> (Ch2A-CSD)	---MVKAVA	VLT---GSE	GVKGTIFFFQ	-----	EGE-GPTTVT	GSVTGLKEGL	
<i>T. aestivum</i> (Ch2D-CSD)	---MVKAVA	VLT---GSE	GVKGTIFFFQ	-----	EGD-GPTTVT	GSVTGLKEGL	
<i>S. spontaneum</i> (Chr1B-CSD)	---MVKAVA	VLG---SSE	GVKGTIFFFQ	-----	EGD-GPTTVT	GSVSGLKPGL	
<i>S. spontaneum</i> (Chr1C-CSD)	---MVKAVA	VLG---SSE	GVKGTIFFFQ	-----	EGD-GPTTVT	GSVSGLKPGL	
<i>S. spontaneum</i> (Chr1D-CSD)	---MVKAVA	VLG---SSE	GVKGTIFFFQ	-----	EGD-GPTTVT	GSVSGLKPGL	
<i>S. spontaneum</i> (Chr2C-CSD)	---MVKAVA	VLA---G-P	DVKGTIFFFSQ	-----	EGD-GPTTVT	GSISGLKPGL	
<i>A. officinalis</i> (V102-CSD)	---MVKAVA	VIA---G-E	IVKGQVFFQ	-----	EGD-GPTTVT	GSVSGLKPGL	
<i>A. officinalis</i> (V108-CSD)	---MVKAVA	VVA---G-D	VVKGVHFFSQ	-----	EGD-GPTTVT	GSVSGLKPGL	
<i>A. officinalis</i> (V103-CSD)	---MVKAVA	VVA---G-D	VVKGVHFFSQ	-----	EGD-GPTTVT	GSVSGLKPGL	
<i>Z. japonica</i> (Sca0001-CSD)	---MGKAVA	VLS---GTE	GVKGTILFSQ	-----	EGD-GPTAVT	GSISGLKPGL	
<i>Z. japonica</i> (Sca0003.1-CSD)	---MVKAVA	VLG---SNE	GVKGTIFFFQ	-----	EGD-GPTTVT	GSVSGLKPGL	
<i>H. vulgare</i> (Chr2-CSD)	---MVKAVA	VLT---GSE	GVKGTIFFFQ	-----	EGD-GPTTVT	GSVTGLKEGL	
<i>H. vulgare</i> (Chr5-CSD)	---MVKAVA	MLT---GSE	GVKGTIFFFQ	-----	EGD-GPTTVT	ASVTGLKEGL	
<i>H. vulgare</i> (Chr5-CSDb)	---MVKDVD	VLT---GSE	GVKGTIFFFQ	-----	EGD-GPTTVT	ESVTGLKEGL	
<i>C. sim</i> (Sca247-CSD)	---MVKAVA	VLG---GSE	GVKGTIVYFTQ	-----	EGD-GPTTVT	GSLSGLKAGL	
<i>C. sim</i> (Sca212-CSD)	---MVKAVA	VLD---GTE	GVKGTVCFTQ	-----	EGD-GPTTVT	ASISGLKPGL	
<i>B. distachyon</i> -CSD	---MVKAVA	VLS---GSE	GVKGTIFFFQ	-----	EGD-GPTTVT	GSVSGLKEGL	
<i>S. polyrrhiza</i> -CSD	---MVKAVA	VMT---GSE	GVSGTVFFSQ	-----	EGD-GRTSVS	GSLSGLKPGL	
<i>P. glaucum</i> -CSD	---MVKAVV	VLA---SSE	GVKGTIHFQ	-----	EGD-GPTTVT	GSVSGLKPGL	
<i>Z. marina</i> -CSD	---MVKAVA	VLT---GSQ	GVQGTVFFDQ	-----	EAENGPTVVN	ASLTGLKPGD	
<i>D. carota</i> (Chr1-CSD)	---MAKGVA	VLS---SST	GVSGTIYFTQ	-----	EGD-GPTTVT	GNVSLAPGP	
<i>D. carota</i> (Chr9-CSD)	---MAKGVA	VLS---SSA	GVSGTIYFTQ	-----	EGD-GPTTVT	GNVSLAPGP	
<i>M. esculanta</i> (Chr8-CSD)	---MVKAVA	VLN---SSE	GVAGTIFFFQ	-----	EGD-GPTTVT	GSVSGLKPGL	
<i>M. esculanta</i> (Chr9-CSD)	---MVKAVA	VLT---SSE	GVSGTIFFFQ	-----	EGH-GPTTVT	GNISGLKPGL	
<i>E. guttata</i> (Sca7-CSD)	---MVKGVA	VLK---SSE	GVNGTIFFFQ	-----	EGD-GPTTVN	GNVSGLKPGL	
<i>E. guttata</i> (Sca14-CSD)	---MVKAVA	VLN---SSE	GVKGTIHFQ	-----	EGD-APTTVT	GNLSGLKPGL	
<i>C. cajan</i> (LG03-CSDa)	---MVKAVA	VLGN---STE	GVNGKIFFFQ	-----	EGN-GLTTVT	GFVTGLSPGF	
<i>C. cajan</i> (LG03-CSDb)	---MVKAVA	VLGN---STE	GVNGKIFFFQ	-----	EGN-GLTTVT	GFVTGLSPGF	
<i>C. cajan</i> (SC130189-CSD)	---MVKAVA	VLG---SSE	GVTGTIFFFSQ	-----	EGN-GPTTVT	GSLAGLKPGL	
<i>H. bra</i> (NW018746327.1-CSD)	---MVKAVA	VLG---SSE	GVSGTVFFSQ	-----	EGD-GQTTVT	GNVSGLKPGL	
<i>H. bra</i> (NW018745806.1-CSD)	---MLKAVA	VIT---SSE	GISCKIFFFQ	-----	EGD-GPTTVT	GSVSGLKPGL	
<i>H. bra</i> (NW018746407.1-CSD)	---MVKAVA	VLG---SSE	GVSGTIFFSQ	-----	EGD-GQTTVT	GNVSGLKPGL	
<i>E. grandis</i> (Chr2-CSD)	---MVKAVV	VLK---SSE	GVCGTVYFTQ	-----	EGD-GPTTVT	GSLSGLKPGL	
<i>E. grandis</i> (Chr8-CSD)	---MVKAVA	VLG---SSE	GVGTIVHFVQ	-----	EGD-GPTTVT	GSLSGLKPGL	
<i>C. melo</i> (Sca3-CSD)	---MVKAVA	VLE---SNQ	GVSGTIFFSQ	-----	NGN-GPTTIT	GNISGLKAGL	
<i>C. melo</i> (Sca25-CSD)	---MVKAVA	VLG---SSE	GVSGTIFFFQ	-----	EGD-GPTTVT	GNVSGLKPGL	
<i>C. clementina</i> (Sca5-CSDa)	RGVPPTVKAVA	YVI---SKW	GPKGILHFKQ	-----	EGD-GPTTIK	GTLYYLSQGA	
<i>C. clementina</i> (Sca5-CSDb)	---MVKAVA	VLG---GTE	GVKGTIVFFQ	-----	EGD-GPTTVS	GNLSGLKPGP	
<i>B. oleracea</i> (Chr5-CSD)	---MGKGVA	VLN---SSE	GVKGTIFFFQ	-----	EGD-GVTSVT	GTVSGLKPGL	
<i>B. oleracea</i> (Chr8-CSD)	DHKTMAKGVA	VLN---SSE	GVKGTIFFFH	-----	EGN-GATTVT	GTVSGLKPGL	
<i>A. chinensis</i> (Chr3-CSD)	SRITMVKAVT	VLT---SSN	GVCGTVYFTQ	-----	EGD-DPTTVT	GTLSGLIPGL	
<i>A. chinensis</i> (Chr29-CSD)	---MAKAVA	VLS---GSE	GVSGTVYFFQ	-----	EGD-GPTTFT	GNLSGLKPGL	
<i>V. vinifera</i> (Chr14-CSDa)	---MVKAVA	VLN---SNE	GVCGTIYFAE	-----	EGD-GSTTVT	GSLSGLKPGL	
<i>V. vinifera</i> (Chr14-CSDb)	---MVKAVA	VLN---SNE	GACGTIYFAE	-----	EGD-GSTTVT	GSLSGLKPGL	
<i>M. domestica</i> (Bb4037-CSD)	---MVKGVA	VLG---SSE	GVKGTISFVQ	-----	EGD-GPTTVT	G-----	
<i>M. domestica</i> (Bb6170-CSD)	---MVKGVA	VLG---SSE	GVKGTIVFVQ	-----	EGD-GPTTVT	CISGLKPGL	
<i>T. has</i> (NW_010961290.1-CSD)	---MVKAVA	VLS---CSE	GVKGTINFQ	-----	EGD-GPTTVT	GNVSGLKPGL	
<i>T. has</i> (NW_010966881.1-CSD)	---MVKAVA	VLS---SSE	GVKGTINFQ	-----	EGD-GPTNVS	GNVSGLKPGL	
<i>G. max</i> (Chr3-CSD)	---MVKAVA	VLG---SSE	GVTGTHFVQ	-----	EGS-GPTTVT	GSLAGLKPGL	
<i>G. max</i> (Chr19-CSD)	---MVKAVA	VLG---SSE	GVGTIIFFTQ	-----	EGN-GPTTVT	GNVSGLKPGL	
<i>B. rapa</i> (Chr6-CSD)	---MGKGVA	VLN---SGE	GVKGTIFFFQ	-----	EGD-GVTTVT	GTVSGLKPGL	
<i>B. rapa</i> (Chr9-CSD)	---MAKGVA	VLN---SSE	GVKGTIFFFQ	-----	EGD-GATTVT	GTVSGLKPGL	
<i>N. nucifera</i> (MSc13-CSD)	---MVKAVA	VLG---SNA	GVNGTIYFTE	-----	EED-GSTKVT	GSVSGLKPGL	
<i>N. nucifera</i> (MSc9-CSD)	---MVKAVA	VLN---SRE	GVNGTIYFTE	-----	EED-GSTKVT	GSVSGLKPGL	
<i>C. canephora</i> (Chr2-CSD)	---MVKAVA	VLS---GNE	CVSGTIFLTQ	-----	EGD-GPTTVT	GTITGLKPGL	
<i>C. canephora</i> (Chr3-CSD)	SHKTMVKAVV	VLG---CSE	GVKGTIYFTQ	-----	EGD-GPTTVT	GEVSGLKPGL	
<i>P. trichocarpa</i> (Chr5-CSD)	---MVKAVA	VLN---SSE	-----	-----	---GQTTVT	GNLSGLKPGL	
<i>P. trichocarpa</i> (Chr13-CSD)	---MVKAVA	VLN---SSE	GVKGTINFQ	-----	EGD-GPTTVT	GSLSGLKPGL	
<i>A. thaliana</i> -CSD	---MAKGVA	VLN---SSE	GVGTIIFFTQ	-----	EGD-GPTTVS	GTVSGLKPGL	
<i>P. axillaris</i> -CSD	---MVKGVA	VLS---SSE	GVSGTIFFAQ	-----	DGD-GPTTVT	GNVSGLKPGL	
<i>P. bretschneideri</i> -CSD	---MVKGVA	VLG---SSE	GVKGTISFVQ	-----	EGD-GPTTVT	GSVSGLKPGL	
<i>S. lycopersicum</i> -CSD	---MVKAVA	VLN---SSE	GVSGTILFQ	-----	DGD-APTTVN	GNISGLKPGL	
<i>M. truncatula</i> -CSD	---MVKAVA	VLG---NSN	DVSGTISFTQ	-----	EGN-GPTTVT	GNLSGLKPGL	
<i>V. radiata</i> -CSD	SHCAMVKAVA	VLG---SSE	GVGTIVYFSQ	-----	DGN-GPTTVT	GTLAGLKPGL	
<i>P. atrosanguinea</i> -CSD	---MAKGVA	VLS---SSE	GVAGTILFQ	-----	EGD-GPTTVT	GNISGLKPGL	
<i>C. limon</i> -CSD	---MVKAVA	VLG---GTE	GVKGTIVSFTQ	-----	EGD-GPTTVS	GSLSGLKPGL	
<i>C. annuum</i> -CSD	---MVKAVA	VLS---SSE	CVSGTILFQ	-----	DGD-APTTVT	GNVSGLKPGL	
<i>C. aromatica</i> -CSD	---MVKAVA	VLG---SSE	GVKGTIYFVQ	-----	EGD-GPTTVT	GSITGLKAGL	
<i>A. trichopoda</i> -CSD	ITYKMVKAVA	VLG---SKE	GVSGTVFFFQ	-----	EGD-GPTTVT	GSLSGLQPGP	

→

◀#2▶

←#3→

←#4→

→#5→

←#6

Monocots

Dicots

	150	160	170	180	190	200	210
							
<i>O. sativa</i> (Chr3-CSD1)	HGFFHIALGD	TTNGCMS---	---TGPHYNP	AGKEHGAPED	ETRHAGDLGN	VTAGEDG---	-----
<i>O. sativa</i> (Chr7-CSD4)	HGFFVHALGD	TTNGCMS---	---TGPHFNP	TGKEHGAPQD	ENRHAGDLGN	ITAGADG---	-----
<i>O. brachyantha</i> (Chr3-CSD)	HGFFHIALGD	TTNGCMS---	---TGPHYNP	AGKEHGAPED	ETRHAGDLGN	VTAGEDG---	-----
<i>O. brachyantha</i> (Chr7-CSD)	HGFFVHALGD	TTNGCMS---	---TG-EMDY	GVLLITGEIAI	CSYCR---AT	LQSYWEG---	-----
<i>S. italica</i> (Chr2-CSD)	HGFFVHALGD	TTNGCMS---	---TGPHFNP	AGKEHGAPED	ENRHAGDLGN	VTAGEDG---	-----
<i>S. italica</i> (Chr9-CSD)	HGFFVHALGD	TTNGCMS---	---TGPHYNP	AGKEHGAPED	DNRHAGDLGN	VTAGADG---	-----
<i>S. bicolor</i> (Chr1-CSD)	HGFFVHALGD	TTNGCMS---	---TGPHYNP	ASKEHGAPED	ENRHAGDLGN	VTAGADG---	-----
<i>S. bicolor</i> (Chr2-CSD)	HGFFVHALGD	TTNGCMS---	---TGPHFNP	AGKEHGAPED	ENRHAGDLGN	VTAGEDG---	-----
<i>E. guineensis</i> (Chr5-CSD)	HGFFVHALGD	TTNGCMS---	---TGPHFNP	AGKEHGAPED	DNRHAGDLGN	VTVGDDG---	-----
<i>E. guineensis</i> (Chr14-CSD)	HGFFVHALGD	TTNGCMS---	---TGPHFNP	AGHEHGAPED	EIRHAGDLGN	VTAGDDG---	-----
<i>O. thomaeum</i> (001-CSDa)	HGFFVHAFGD	TTNGCMS---	---TGPHYNP	SGKEHGAPED	EIRHAGDLGN	VTAGPDG---	-----
<i>O. thomaeum</i> (001-CSDb)	HGFFVHALGD	TTNGCMS---	---TGPHYNP	AGKEHGAPED	EIRHAGDFGN	VTAGPDG---	-----
<i>O. thomaeum</i> (027-CSD)	HGFFVHALGD	TTNGCMS---	---TGPHFNP	TGKEHGAPED	DNRHAGDLGN	VTAGQDG---	-----
<i>Z. mays</i> (B73) (Chr7-CSD)	HGFFVHALGD	TTNGCMS---	---TGPHFNP	VGKEHGAPED	EDRHAGDLGN	VTAGEDG---	-----
<i>Z. mays</i> (B73) (Chr9-CSD)	HGFFVHALGD	TTNGCMS---	---TGPHYNP	ASKEHGAPED	ENRHAGDLGN	VTAGADG---	-----
<i>Z. mays</i> (PH207) (Chr1-CSD)	HGFFVHALGD	TTNGCMS---	---TGPHYNP	ASKEHGAPED	ENRHAGDLGN	VTAGADG---	-----
<i>Z. mays</i> (PH207) (Chr7-CSD)	HGFFVHALGD	TTNGCMS---	---TGPHFNP	VGKEHGAPED	EDRHAGDLGN	VTAGEDG---	-----
<i>Z. mays</i> (PH207) (Chr9-CSD)	HGFFVHALGD	TTNGCMS---	---TGPHYNP	ASKEHGAPED	ENRHAGDLGN	VTAGADG---	-----
<i>C. americanus</i> (Chr5-CSD)	HGFFVHALGD	TTNGCMS---	---TGPHYNP	AGKEHGAPED	ENRHAGDLGN	VTAGADGKDL	LLIVPICCIP
<i>C. americanus</i> (Chr7-CSD)	HGFFVHALGD	TTNGCMS---	---TGPHFNP	AGKEHGAPED	ENRHAGDLGN	VTAGEDG---	-----
<i>A. comosus</i> (LG4-CSD)	HGFFVHALGD	TTNGCMS---	---TGPHFNP	TGKEHGAPED	ENRHAGDLGN	VTAGEDGS---	-----
<i>A. comosus</i> (LG14-CSD)	HGFFVHALGD	TTNGCMS---	---TGPHFNP	AGKEHGAPED	EHRHAGDLGN	VTAGEDG---	-----
<i>M. acuminata</i> (Chr8-CSD)	HGFFVHEFGD	TTNGCMS---	---TGPHFNP	TGEDHGDRED	PVRHIGDLGN	VIAGDDG---	-----
<i>T. aestivum</i> (Ch2A-CSD)	HGFFVHALGD	TTNGCMS---	---TGPHFNP	AGHVHGAPED	EIRHAG---	-----	-----
<i>T. aestivum</i> (Ch2D-CSD)	HGFFVHALGD	TTNGCMS---	---TGPHFNP	AGHVHGAPED	EIRHAGDLGN	VTAGADG---	-----
<i>S. spontaneum</i> (Chr1B-CSD)	HGFFVHALGD	TTNGCIS---	---TGPHYNP	ASKEHGAPED	ENRHAGDLGN	VTAGADG---	-----
<i>S. spontaneum</i> (Chr1C-CSD)	HGFFVHALGD	TTNGCIS---	---TGPHYNP	ASMEHGAPED	ENRHAGDLGN	VTAGADG---	-----
<i>S. spontaneum</i> (Chr1D-CSD)	HGFFVHALGD	TTNGCIS---	---TGPHYNP	ASKEHGAPED	ENRHAGDLGN	VTAGADG---	-----
<i>S. spontaneum</i> (Chr2C-CSD)	HGFFVHALGD	TTNGCMS---	---TGPHFNP	AGKEHGAPED	ENRHAGDLGN	VTAGEDG---	-----
<i>A. officinalis</i> (V102-CSD)	HGFFVHALGD	TTNGCMS---	---TGPHFNP	AGKEHGAPND	ENRHAGDLGN	VTATEDG---	-----
<i>A. officinalis</i> (V108-CSD)	HGFFVHALGD	TTNGCMS---	---TGPHFNP	AGKEHGAPED	ENRHAGDLGN	VTVAEDG---	-----
<i>A. officinalis</i> (V103-CSD)	HGFFVHALGD	TTNGCMS---	---TGPHFNP	AGKEHGAPED	ENRHAGDLGN	VTVAEDG---	-----
<i>Z. japonica</i> (Sca0001-CSD)	HGFFVHALGD	TTNGCNS---	---TGPHFNP	TGKEHGAPED	ENRHAGDLGN	VTAGQDG---	-----
<i>Z. japonica</i> (Sca0003.1-CSD)	HGFFVHALGD	TTNGCMS---	---TGPHYNP	AGKEHGAPED	EIRHAGDLGN	VTAGADG---	-----
<i>H. vulgare</i> (Chr2-CSD)	HGFFVHALGD	TTNGCMS---	---TGPHFNP	AGHVHGAPED	EIRHAGDLGN	VTAGADG---	-----
<i>H. vulgare</i> (Chr5-CSD)	HGFFVHALGD	TTNGCMS---	---TGPHFNP	TGHVHGAPED	EIRHAGDLGN	VTAGADG---	-----
<i>H. vulgare</i> (Chr5-CSDb)	HGFFVHALGD	TTNGCMS---	---TGPHFNP	AGHVHGAPED	EIRHAGDLGN	VTAGADG---	-----
<i>C. sim</i> (Sca247-CSD)	HGFFVHALGD	TTNGCMS---	---TGPHFNP	AGKEHGAPED	ENRHAGDLGN	VTVGDDG---	-----
<i>C. sim</i> (Sca212-CSD)	HGFFVHALGD	TTNGCMS---	---TGPHFNP	AGKEHGAPED	ENRHAGDLGN	VIAGDDG---	-----
<i>B. distachyon</i> -CSD	HGFFVHALGD	TTNGCMS---	---TGPHFNP	AGKEHGAPED	ETRHAGDLGN	VTAGVDG---	-----
<i>S. polyrhiza</i> -CSD	HGFFVHSLGD	TTNGCMS---	---TGPHFNP	SGKEHGAPED	EIRHAGDLGN	VTAGEDG---	-----
<i>P. glaucum</i> -CSD	HGFFVHALGD	TTNGCMS---	---TGPHYNP	AGKEHGAPED	ENRHAGDLGN	VTAGADG---	-----
<i>Z. marina</i> -CSD	HGFFHIALGD	TTNGCMS---	---TGPHFNP	HGKVHGSPLD	EIRHAGDLGN	VTAKEDG---	-----
<i>D. carota</i> (Chr1-CSD)	HGFFVHALGD	TTNGCMS---	---TGPHYNP	AGKEHGAPED	ENRHAGDLGN	VTVGEDG---	-----
<i>D. carota</i> (Chr9-CSD)	HGFFVHALGD	TTNGCMS---	---TGPHYNP	AGKEHGAPED	ENRHAGDLGN	VTVGEDG---	-----
<i>M. esculanta</i> (Chr8-CSD)	HGFFVHALGD	TTNGCMS---	---TGPHFNP	GGKEHGAPED	DIRHAGDLGN	VTAGDDG---	-----
<i>M. esculanta</i> (Chr9-CSD)	HGFFVHALGD	TTNGCMS---	---TGPHFNP	SGKDHGAPED	EIRHAGDLGN	VTAGDDG---	-----
<i>E. guttata</i> (Sca7-CSD)	HGFFVHALGD	TTNGCLS---	---TGPHFNP	AGKEHGAPED	EVRHAGDLGN	VTVGEDG---	-----
<i>E. guttata</i> (Sca14-CSD)	HGFFVHALGD	TTNGCMS---	---TGPHFNP	AGKEHGAPDD	EVRHAGDLGN	VTVGEDG---	-----
<i>C. cajan</i> (LG03-CSDa)	HGFFHIALGD	TTNGCLS---	---TGEHFD	IGKVHGGPTD	VNRHAGDLGN	LDVAGDG---	-----
<i>C. cajan</i> (LG03-CSDb)	HGFFHIALGD	TTNGCLS---	---TGEHFD	IGKVHGGPTD	VNRHAGDLGN	LDVAGDG---	-----
<i>C. cajan</i> (SC130189-CSD)	HGFFVHALGD	TTNGCLS---	---TGAHFN	NGKEHGAPED	DNRHAGDLGN	VNVGDDG---	-----
<i>H. bra</i> (NW018746327.1-CSD)	HGFFVHALGD	TTNGCMS---	---TGPHFNP	ASKEHGAPED	ENRHAGDLGN	INVGDDG---	-----
<i>H. bra</i> (NW018745806.1-CSD)	HGFFVHTFGD	TTNGCLSTGI	VNWQGLHFNP	ASKDHGGPED	ENRHAGDLGN	VNVGDDG---	-----
<i>H. bra</i> (NW018746407.1-CSD)	HGFFVHALGD	TTNGCMS---	---TGPHFNP	ASKEHGAPED	ENRHAGDLGN	INVGDDG---	-----
<i>E. grandis</i> (Chr2-CSD)	HGFFVHALGD	TTNGCMS---	---TGPHFNP	CGKEHGAPED	QNRHAGDLGN	VNVGDDG---	-----
<i>E. grandis</i> (Chr8-CSD)	HGFFVHALGD	TTNGCMS---	---TGPHFNP	VGKEHGAPED	ENRHAGDLGN	VTVGDNM---	-----
<i>C. melo</i> (Sca3-CSD)	HGFFVHALGD	TTNGCLS---	---TGPHFNP	EGKDHGAPDD	ENRHVGLDGN	VVAGDNG---	-----
<i>C. melo</i> (Sca25-CSD)	HGFFVHALGD	TTNGCMS---	---TGPHFNP	AGKQHGAPED	ENRHAGDLGN	IIVGEDG---	-----
<i>C. clementina</i> (Sca5-CSDa)	HGFFHIVYGD	MAHFQCS	---TGDHFN	FRKHHGGPED	WIRHAGDLGN	IYVGFDG---	-----
<i>C. clementina</i> (Sca5-CSDb)	HGFFVHALGD	TTNGCMS---	---TGPHFNP	AGKEHGPPED	ENRHAGDLGN	VNVGDDG---	-----
<i>B. oleracea</i> (Chr5-CSD)	HGFFVHALGD	TTNGCMS---	---TGPHFNP	DGKQHGAPED	ANRHAGDLGN	IIVGDDG---	-----
<i>B. oleracea</i> (Chr8-CSD)	HGFFVHALGD	TTNGCMS---	---TGPHFNP	DGKTHGAPED	ANRHAGDLGN	IIVGDDG---	-----
<i>A. chinensis</i> (Chr3-CSD)	HGFFVHALGD	TTNGCMS---	---TGPHFNP	GSKEHGAPED	ENRHAGDLGN	ITVGEDG---	-----
<i>A. chinensis</i> (Chr29-CSD)	HGFFVHALGD	TTNGCMS---	---TGPHYNP	ASKEHGAPGD	ENRHAGDLGN	VEVGED---	-----
<i>V. vinifera</i> (Chr14-CSDa)	HGFFVHALGD	TTNGCMS---	---TGPHFNP	AGKEHGAPED	ENRHAGDLGN	VIVGEDG---	-----
<i>V. vinifera</i> (Chr14-CSDb)	HGFFVHALGD	TTNGCMS---	---TGPHFNP	AGKEHGAPED	ENRHAGDLGN	VIVGEDG---	-----
<i>M. domestica</i> (Bb4037-CSD)	-----	-----	---RPHFNP	AGKEHGAPED	EVRHAGDLGN	ITAGDDG---	-----
<i>M. domestica</i> (Bb6170-CSD)	HGFFVHAFGD	TTNGCLSTGK	GPLTGPHFNP	NGKEHGAPE-	EDRHAGDLGN	VTVGDDG---	-----
<i>T. has</i> (NW_010961290.1-CSD)	HGFFVHALGD	TTNGCMS---	---TGPHFNP	AGKEHGAPDD	GNRHAGDLGN	ITVGDDG---	-----
<i>T. has</i> (NW_010966881.1-CSD)	HGFFVHALGD	TTNGCMS---	---TGPHFNP	AGKEHGAPED	EHRHAGDLGN	ITVGADG---	-----
<i>G. max</i> (Chr3-CSD)	HGFFVHALGD	TTNGCLS---	---TGSHFNP	NNKEHGAPED	ENRHAGDLGN	VNVGDDG---	-----
<i>G. max</i> (Chr19-CSD)	HGFFVHALGD	TTNGCLS---	---TGAHFN	NNNEHGAPED	ENRHAGDLGN	VNVGDDG---	-----
<i>B. rapa</i> (Chr6-CSD)	HGFFVHALGD	TTNGCMS---	---TGPHFNP	DGKQHGAPED	ANRHAGDLGN	IIVGDDG---	-----
<i>B. rapa</i> (Chr9-CSD)	HGFFVHALGD	TTNGCMS---	---TGPHFNP	DGKTHGAPED	ANRHAGDLGN	IIVGDDG---	-----
<i>N. nucifera</i> (MScl3-CSD)	HGFFVHALGD	TTNGCMS---	---TGPHFNP	HGKEHGAPED	ENRHAGDLGN	VTVGEDG---	-----
<i>N. nucifera</i> (MSC9-CSD)	HGFFVHALGD	TTNGCMS---	---TGPHFNP	QSKEHGAPED	ENRHAGDLGN	VTVGEDGRCS	SVFSLSCMAI
<i>C. canephora</i> (Chr2-CSD)	HGFFVHALGD	TTNGCMS---	---TGPHFNP	KGKEHGAPCD	ENRHAGDLGN	VTAGQDG---	-----
<i>C. canephora</i> (Chr3-CSD)	HGFFVHALGD	TTNGCLS---	---TGPHFNP	GGKEHGAPED	ENRHAGDLGN	ITVGEDG---	-----
<i>P. trichocarpa</i> (Chr5-CSD)	HGFFVHALGD	TTNGCMS---	---TGPHFNP	VGKEHGAPED	ENRHAGDLGN	VTVGDDG---	-----
<i>P. trichocarpa</i> (Chr13-CSD)	HGFFVHALGD	TTNGCMS---	---TGPHFNP	VGKEHGAPED	ENRHAGDLGN	VTVGDDG---	-----
<i>A. thaliana</i> -CSD	HGFFVHALGD	TTNGCMS---	---TGPHFNP	DGKTHGAPED	ANRHAGDLGN	ITVGDDG---	-----
<i>P. axillaris</i> -CSD	HGFFVHALGD	TTNGCMS---	---TGPHFNP	AGKEHGSPE	EVRHAGDLGN	ITVGEDG---	-----
<i>P. bretschneideri</i> -CSD	HGFFVHALGD	TTNGCMS---	---TGPHFNP	AGKEHGAPED	EDRHAGDLGN	ITAGDDG---	-----
<i>S. lycopersicum</i> -CSD	HGFFVHALGD	TTNGCMS---	---TGPHYNP	AGKEHGAPED	EVRHAGDLGN	ITVGEDG---	-----
<i>M. truncatula</i> -CSD	HGFFHIALGD	TTNGCLS---	---TGPHFNP	NGKEHGAPED	ETRHAGDLGN	VTVGDDG---	-----
<i>V. radiata</i> -CSD	HGFFVHALGD	TTNGCLS---	---TGPHFNP	NNKEHGAPED	ENRHAGDLGN	VNVGDDG---	-----
<i>P. atrosanguinea</i> -CSD	HGFFVHALGD	TTNGCMS---	---TGPHFNP	AGKEHGSPE	ETRHAGDLGN	ITVGDDG---	-----
<i>C. limon</i> -CSD	HGFFVHALGD	TTNGCMS---	---TGPHFNP	AGKEHGAPED	DNRHAGDLGN	VNVSDDG---	-----
<i>C. annuum</i> -CSD	HGFFVHALGD	TTNGCMS---	---TGPHYNP	AGKEHGAPED	ENRHAGDLGN	ITVGEDG---	-----
<i>C. aromatica</i> -CSD	HGFFVHALGD	TTNGCMS---	---TGPHFNP	AGKEHGAPED	VNRHAGDLGN	VTASEDG---	-----
<i>A. trichopoda</i> -CSD	HGFFVHALGD	TTNGCMS---	---TGPHFNP	VGKEHGAPED	ENRHAGDLGN	VTVGEDG---	-----

		220	230	240	250	260	270	280
								
Monocots	<i>O. sativa</i> (Chr3-CSD1)	-----	-----	-----	-----	-----	VA NIHVVDS	----
	<i>O. sativa</i> (Chr7-CSD4)	-----	-----	-----	-----	-----	VA NVNVSDS	----
	<i>O. brachyantha</i> (Chr3-CSD)	-----	-----	-----	-----	-----	VA NINVVDS	----
	<i>O. brachyantha</i> (Chr7-CSD)	-----	-----	-----	-----	-----	VA NVNISDS	----
	<i>S. italica</i> (Chr2-CSD)	-----	-----	-----	-----	-----	VA NVNITDC	----
	<i>S. italica</i> (Chr9-CSD)	-----	-----	-----	-----	-----	VA NINVTDS	----
	<i>S. bicolor</i> (Chr1-CSD)	-----	-----	-----	-----	-----	VA NISVSDS	----
	<i>S. bicolor</i> (Chr2-CSD)	-----	-----	-----	-----	-----	VV NVNITDS	----
	<i>E. guineensis</i> (Chr5-CSD)	-----	-----	-----	-----	-----	TV SFTITDN	----
	<i>E. guineensis</i> (Chr14-CSD)	-----	-----	-----	-----	-----	TV NFTIIDS	----
	<i>O. thomaeum</i> (001-CSDa)	-----	-----	-----	-----	-----	VA NINVTDC	----
	<i>O. thomaeum</i> (001-CSDb)	-----	-----	-----	-----	-----	VA NINVTDC	----
	<i>O. thomaeum</i> (027-CSD)	-----	-----	-----	-----	-----	VA NVNIKDS	----
	<i>Z. mays</i> (B73) (Chr7-CSD)	-----	-----	-----	-----	-----	VV NVNITDS	----
	<i>Z. mays</i> (B73) (Chr9-CSD)	-----	-----	-----	-----	-----	VA NINVTDS	----
	<i>Z. mays</i> (PH207) (Chr1-CSD)	-----	-----	-----	-----	-----	VA NINVTDS	----
	<i>Z. mays</i> (PH207) (Chr7-CSD)	-----	-----	-----	-----	-----	VV NVNITDS	----
	<i>Z. mays</i> (PH207) (Chr9-CSD)	-----	-----	-----	-----	-----	VA NINVTDS	----
	<i>C. americanus</i> (Chr5-CSD)	MQWVLGTRLL	ALWKLSYFCD	PVDVACNSIH	NLTCYVPMYE	TIRHPTSLVI	DFISLLSGVA	NINVTDS
	<i>C. americanus</i> (Chr7-CSD)	-----	-----	-----	-----	-----	VA NVNITDC	----
	<i>A. comosus</i> (LG4-CSD)	-----	-----	-----	-----	-----	TA NVNIVDN	----
	<i>A. comosus</i> (LG14-CSD)	-----	-----	-----	-----	-----	TA TFTIVDN	----
	<i>M. acuminata</i> (Chr8-CSD)	-----	-----	-----	-----	-----	TA NFTMFDS	----
	<i>T. aestivum</i> (Ch2A-CSD)	-----	-----	-----	-----	-----	VA SINITDC	----
	<i>T. aestivum</i> (Ch2D-CSD)	-----	-----	-----	-----	-----	VA NINVTDC	----
	<i>S. spontaneum</i> (Chr1B-CSD)	-----	-----	-----	-----	-----	VA NISVSDS	----
	<i>S. spontaneum</i> (Chr1C-CSD)	-----	-----	-----	-----	-----	VA NISVSDSQVI	----
	<i>S. spontaneum</i> (Chr1D-CSD)	-----	-----	-----	-----	-----	VA NISVSDS	----
	<i>S. spontaneum</i> (Chr2C-CSD)	-----	-----	-----	-----	-----	VV NVNITDS	----
	<i>A. officinalis</i> (V102-CSD)	-----	-----	-----	-----	-----	TA SFSIVDS	----
	<i>A. officinalis</i> (V108-CSD)	-----	-----	-----	-----	-----	TA TFSITDS	----
	<i>A. officinalis</i> (V103-CSD)	-----	-----	-----	-----	-----	TA TFSITDS	----
	<i>Z. japonica</i> (Sca0001-CSD)	-----	-----	-----	-----	-----	VA NVNITDS	----
	<i>Z. japonica</i> (Sca0003.1-CSD)	-----	-----	-----	-----	-----	VA NINVTDS	----
	<i>H. vulgare</i> (Chr2-CSD)	-----	-----	-----	-----	-----	VA NINVTDC	----
	<i>H. vulgare</i> (Chr5-CSD)	-----	-----	-----	-----	-----	VA NINVTDC	----
	<i>H. vulgare</i> (Chr5-CSDb)	-----	-----	-----	-----	-----	VA NINVTDC	----
	<i>C. sim</i> (Sca247-CSD)	-----	-----	-----	-----	-----	IV --FVSGC	----
	<i>C. sim</i> (Sca212-CSD)	-----	-----	-----	-----	-----	TV NFTVVDN	----
	<i>B. distachyon</i> -CSD	-----	-----	-----	-----	-----	VA NINVVDI	----
	<i>S. polyrhiza</i> -CSD	-----	-----	-----	-----	-----	NV NITIVDS	----
	<i>P. glaucum</i> -CSD	-----	-----	-----	-----	-----	VA NINVTDS	----
	<i>Z. marina</i> -CSD	-----	-----	-----	-----	-----	TV NFTTTDT	----
Dicots	<i>D. carota</i> (Chr1-CSD)	-----	-----	-----	-----	-----	TA SFTIVDK	----
	<i>D. carota</i> (Chr9-CSD)	-----	-----	-----	-----	-----	TA SFTIVDK	----
	<i>M. esculanta</i> (Chr8-CSD)	-----	-----	-----	-----	-----	TA SFTIVDK	----
	<i>M. esculanta</i> (Chr9-CSD)	-----	-----	-----	-----	-----	TA SFTIIDK	----
	<i>E. guttata</i> (Sca7-CSD)	-----	-----	-----	-----	-----	TA AFTIIDE	----
	<i>E. guttata</i> (Sca14-CSD)	-----	-----	-----	-----	-----	TA SFTITDS	----
	<i>C. cajan</i> (LG03-CSDa)	-----	-----	-----	-----	-----	KV SFSITVS	----
	<i>C. cajan</i> (LG03-CSDb)	-----	-----	-----	-----	-----	M AYNFVFC	----
	<i>C. cajan</i> (SC130189-CSD)	-----	-----	-----	-----	-----	KV NFSITDS	----
	<i>H. bra</i> (NW018746327.1-CSD)	-----	-----	-----	-----	-----	TA SFTIVDK	----
	<i>H. bra</i> (NW018745806.1-CSD)	-----	-----	-----	-----	-----	TA NFTIVDK	----
	<i>H. bra</i> (NW018746407.1-CSD)	-----	-----	-----	-----	-----	TA SFTIVDK	----
	<i>E. grandis</i> (Chr2-CSD)	-----	-----	-----	-----	-----	TV NFTIIDN	----
	<i>E. grandis</i> (Chr8-CSD)	-----	-----	-----	-----	-----	TA TFTIIDK	----
	<i>C. melo</i> (Sca3-CSD)	-----	-----	-----	-----	-----	TA TFSIIDK	----
	<i>C. melo</i> (Sca25-CSD)	-----	-----	-----	-----	-----	TA NFTIIDN	----
	<i>C. clementina</i> (Sca5-CSDa)	-----	-----	-----	-----	-----	KA KINIVDKHK	----
	<i>C. clementina</i> (Sca5-CSDb)	-----	-----	-----	-----	-----	TA TFTVVDN	----
	<i>B. oleracea</i> (Chr5-CSD)	-----	-----	-----	-----	-----	TA TFTITDC	----
	<i>B. oleracea</i> (Chr8-CSD)	-----	-----	-----	-----	-----	TA TFTITDS	----
	<i>A. chinensis</i> (Chr3-CSD)	-----	-----	-----	-----	-----	TA SFTIVDS	----
	<i>A. chinensis</i> (Chr29-CSD)	-----	-----	-----	-----	-----	-----	----
	<i>V. vinifera</i> (Chr14-CSDa)	-----	-----	-----	-----	-----	TV NFKI	----
	<i>V. vinifera</i> (Chr14-CSDb)	-----	-----	-----	-----	-----	TV NFKIVDK	----
	<i>M. domestica</i> (Bb4037-CSD)	-----	-----	-----	-----	-----	TA TFTIVDK	----
	<i>M. domestica</i> (Bb6170-CSD)	-----	-----	-----	-----	-----	TA TFTIIDK	----
	<i>T. has</i> (NW_010961290.1-CSD)	-----	-----	-----	-----	-----	TA NFTIVDS	----
	<i>T. has</i> (NW_010966881.1-CSD)	-----	-----	-----	-----	-----	TA NFTIVDN	----
	<i>G. max</i> (Chr3-CSD)	-----	-----	-----	-----	-----	TV SFTITDS	----
	<i>G. max</i> (Chr19-CSD)	-----	-----	-----	-----	-----	TV SFSITDS	----
	<i>B. rapa</i> (Chr6-CSD)	-----	-----	-----	-----	-----	TA TFTITDC	----
	<i>B. rapa</i> (Chr9-CSD)	-----	-----	-----	-----	-----	TA TFTITDS	----
	<i>N. nucifera</i> (MSc13-CSD)	-----	-----	-----	-----	-----	TV NFTIVDK	----
	<i>N. nucifera</i> (MSc9-CSD)	TVIIILQFFT	AVTVLYRLHL	CLKAWV-SYH	-----	-----	SGTV NITIVDK	----
	<i>C. canephora</i> (Chr2-CSD)	-----	-----	-----	-----	-----	TA NVLVVDN	----
	<i>C. canephora</i> (Chr3-CSD)	-----	-----	-----	-----	-----	TA SFNIVDK	----
	<i>P. trichocarpa</i> (Chr5-CSD)	-----	-----	-----	-----	-----	TA TFTIIDK	----
	<i>P. trichocarpa</i> (Chr13-CSD)	-----	-----	-----	-----	-----	TA TVSIIDN	----
	<i>A. thaliana</i> -CSD	-----	-----	-----	-----	-----	TA TFTITDC	----
	<i>P. axillaris</i> -CSD	-----	-----	-----	-----	-----	TA SFTIIDK	----
	<i>P. bretschneideri</i> -CSD	-----	-----	-----	-----	-----	TV TFTIVDK	----
	<i>S. lycopersicum</i> -CSD	-----	-----	-----	-----	-----	TA SFTIIDK	----
	<i>M. truncatula</i> -CSD	-----	-----	-----	-----	-----	TA SFTIIDN	----
	<i>V. radiata</i> -CSD	-----	-----	-----	-----	-----	TV TFSITDS	----
	<i>P. atrosanguinea</i> -CSD	-----	-----	-----	-----	-----	TA CFTIVDK	----
	<i>C. limon</i> -CSD	-----	-----	-----	-----	-----	TA TFTVVDN	----
	<i>C. annuum</i> -CSD	-----	-----	-----	-----	-----	TA SFTITDE	----
	<i>C. aromatica</i> -CSD	-----	-----	-----	-----	-----	IV AVSVVDK	----
	<i>A. trichopoda</i> -CSD	-----	-----	-----	-----	-----	TA NFTIVDS	----

Monocots

Dicots

	290	300	310	320	330	340	350
							
<i>O. sativa</i> (Chr3-CSD1)	-----	-----	---QIPLTG	PNSIIGRAVV	VHA---DPDD	LKGKGHELSK	TTGNAGGR--
<i>O. sativa</i> (Chr7-CSD4)	-----	-----	---QIPLTG	AHSIIGRAVV	VHA---DPDD	LKGKGHELSK	TTGNAGGR--
<i>O. brachyantha</i> (Chr3-CSD)	-----	-----	---QIPLTG	PNSIIGRAVV	VHA---DPDD	LKGKGHELSK	TTGNAGGR--
<i>O. brachyantha</i> (Chr7-CSD)	-----	-----	---QIPLTG	PHSIIGRAVV	VHA---DPDD	LKGKGHELSK	TTGNAGGR--
<i>S. italica</i> (Chr2-CSD)	-----	-----	---QIPLTG	PHSIIGRAVV	VHA---DPDD	LKGKGHELSK	STGNAGGR--
<i>S. italica</i> (Chr9-CSD)	-----	-----	---QIPLTG	PNSIIGRAVV	VHA---DPDD	LKGKGHELSK	STGNAGGR--
<i>S. bicolor</i> (Chr1-CSD)	-----	-----	---QIPLTG	PNSIIGRAVV	VHA---DPDD	LKGKGHELSK	STGNAGGR--
<i>S. bicolor</i> (Chr2-CSD)	-----	-----	---QIPLTG	PHSIIGRAVV	VHA---DPDD	LKGKGHELSK	STGNAGGR--
<i>E. guineensis</i> (Chr5-CSD)	-----	-----	---QISLSG	PNSIIGRAVV	VHA---DPDD	LKGKGHELSK	STGNAGGR--
<i>E. guineensis</i> (Chr14-CSD)	-----	-----	---KIPLSG	SNSIIGRAVV	VHA---DPDD	LKGKGHELSK	STGNAGGR--
<i>O. thomaeum</i> (001-CSDa)	-----	-----	---QIPLTG	PNSIIGRAVV	VHA---DPDD	LKGKGHELSK	TTGNAGGR--
<i>O. thomaeum</i> (001-CSDb)	-----	-----	---QIPLTG	PNSIIGRAVV	VHA---DPDD	LKGKGHELSK	TTGNAGGR--
<i>O. thomaeum</i> (027-CSD)	-----	-----	---QIPLAG	PHSIIGRAVV	VHA---DPDD	LKG---GNAI	-----
<i>Z. mays</i> (B73) (Chr7-CSD)	-----	-----	---QIPLAG	PHSIIGRAVV	VHA---DPDD	LKGKGHELSK	STGNAGGR--
<i>Z. mays</i> (B73) (Chr9-CSD)	-----	-----	---QIPLTG	PNSIIGRAVV	VHA---DPDD	LKGKPIQSRS	SKWSISDI--
<i>Z. mays</i> (PH207) (Chr1-CSD)	-----	-----	---QIPLTG	PNSIIGRAVV	VHA---DPDD	LKGKGHELSK	STGNAGGR--
<i>Z. mays</i> (PH207) (Chr7-CSD)	-----	-----	---QIPLAG	PHSIIGRAVV	VHA---DPDD	LKG---GNSSEH	-----
<i>Z. mays</i> (PH207) (Chr9-CSD)	-----	-----	---QIPLTG	PNSIIGRAVV	VHA---DPDD	LKGKGHELSK	STGNAGGR--
<i>C. americanus</i> (Chr5-CSD)	-----	-----	---QIPLTG	PNSIIGRAVV	VHA---DPDD	LGRGGHELSK	STGNAGGR--
<i>C. americanus</i> (Chr7-CSD)	-----	-----	---QIPLTG	PHSIIGRAVV	VHA---DPDD	LKGKGHELSK	STGNAGGR--
<i>A. comosus</i> (LG4-CSD)	-----	-----	---QIPLTG	PNSIIGRAVV	VHA---DPDD	LKGKGHELSK	TTGNAGGR--
<i>A. comosus</i> (LG14-CSD)	-----	-----	---QIPLTG	QNSIIGRAVV	VHA---DPDD	LKGKGHELSK	TTGNAGGR--
<i>M. acuminata</i> (Chr8-CSD)	-----	-----	---KIALVG	CDSIIGRAIV	VHA---DPDD	LGRGGHELSK	TTGNSGAR--
<i>T. aestivum</i> (Ch2A-CSD)	-----	-----	---HIPLTG	PNSIVGRAVV	VHG---DADD	LKGKGHELSK	STGNAGAR--
<i>T. aestivum</i> (Ch2D-CSD)	-----	-----	---HIPLTG	PNSIVGRAVV	VHG---DADD	LKGKGHELSK	STGNAGAR--
<i>S. spontaneum</i> (Chr1B-CSD)	-----	-----	---QIPLTG	PNSIIGRAVV	VHA---DPDD	LKGKGHELSK	STGNAGGR--
<i>S. spontaneum</i> (Chr1C-CSD)	RHLVDPFDSY	VTLAFSLTPL	MIFFQIPLTG	PNSIIGRAVV	VHA---DPDD	LKGKGHELSK	STGNAGGR--
<i>S. spontaneum</i> (Chr1D-CSD)	-----	-----	---QIPLTG	PNSIIGRAVV	VHA---DPDD	LKGKGHELSK	STGNAGGR--
<i>S. spontaneum</i> (Chr2C-CSD)	-----	-----	---QVDMNL	ARALEMLADV	LPVVSLSGSKA	RCYPPRQKAK	YYGSEHLR--
<i>A. officinalis</i> (V102-CSD)	-----	-----	---QIPLTG	PNSIIGRAVV	VHA---DPDD	LKGKGHELSK	STGNAGGR--
<i>A. officinalis</i> (V108-CSD)	-----	-----	---QIPLTG	PNSIIGRAVV	VHA---DPDD	LKGKGHELSK	STGNAGGR--
<i>A. officinalis</i> (V103-CSD)	-----	-----	---QIPLTG	PNSIIGRAVV	VHA---DPDD	LKGKGHELSK	AKALEMLV--
<i>Z. japonica</i> (Sca0001-CSD)	-----	-----	---QIPLTG	PHSIIGRAIV	VHA---DPDD	LKGKGHELSK	STGNAGGR--
<i>Z. japonica</i> (Sca0003.1-CSD)	-----	-----	---QIPLTG	PNSIIGRAVV	VHA---DPDD	LKGKGHELSK	TTGNAGGRGS
<i>H. vulgare</i> (Chr2-CSD)	-----	-----	---HIPLAG	PHSIIGRAVV	VHG---DADD	LKGKGHELSK	STGNAGAR--
<i>H. vulgare</i> (Chr5-CSD)	-----	-----	---HIPLAG	PHSIIGRVVV	VHG---DADD	LKGKNTLETL	ESYIFVPP--
<i>H. vulgare</i> (Chr5-CSDb)	-----	-----	---HIPLAG	PHSIIHGDVV	VHG---DADD	LKGKNTLETL	ESYIFVPP--
<i>C. sim</i> (Sca247-CSD)	-----	-----	---TIPLSG	PNSIIGRAVV	VHA---DPDD	LKGKGHELSK	STGNAGGR--
<i>C. sim</i> (Sca212-CSD)	-----	-----	---QIPLGG	PNSIIGRAVV	VHG---DPD-	VKGKGHELSK	STGNAGGR--
<i>B. distachyon</i> -CSD	-----	-----	---QIPLTG	PHSIIGRAVV	VHG---DPDD	LKGKGHELSK	STGNAGAR--
<i>S. polyrhiza</i> -CSD	-----	-----	---QIPLTG	PDVVVGRAVV	VHA---DPDD	LKGKGHELSK	TTGNAGGR--
<i>P. glaucum</i> -CSD	-----	-----	---QIPLTG	PNSIIGRAVV	VHA---DPDD	LGRGGHELSK	STGNAGGR--
<i>Z. marina</i> -CSD	-----	-----	---QIPLLG	PLSIIGRAVV	VHA---ESDD	LKGKGHELSL	STGNAGGR--
<i>D. carota</i> (Chr1-CSD)	-----	-----	---QIPLTG	AGSIIGRAVV	VHA---DPDD	LKGKGHELSK	STGNAGGR--
<i>D. carota</i> (Chr9-CSD)	-----	-----	---QIPLTG	SGSIIGRAVV	VHA---DPDD	LKGKGHELSK	STGNAGGR--
<i>M. esculanta</i> (Chr8-CSD)	-----	-----	---DIPLSG	PHSIVGRAVV	VHA---DPDD	LKGKGHELSK	TTGNAGGR--
<i>M. esculanta</i> (Chr9-CSD)	-----	-----	---HIPLSG	QNSIIGRAVV	VHA---DPDD	LGRGGHELSK	TTGNAGGR--
<i>E. guttata</i> (Sca7-CSD)	-----	-----	---QIPLTG	PHSIIGRAVV	VHG---DADD	LKGKGHELSK	TTGNAGGR--
<i>E. guttata</i> (Sca14-CSD)	-----	-----	---QIPLSG	PNSIVGRAVV	VHG---DPDD	LGRGGHELSK	ATGNAGGR--
<i>C. cajan</i> (LG03-CSDa)	-----	-----	---QVCYSS	PNQYV----	-----	-----	-----
<i>C. cajan</i> (LG03-CSDb)	-----	-----	---LICLFC	ISYSN----	-----	-----	-----
<i>C. cajan</i> (SC130189-CSD)	-----	-----	---QIPLTG	PNSIIGRAVV	VHA---DPDD	LKGKGHELSK	STGNAGGR--
<i>H. bra</i> (NW018746327.1-CSD)	-----	-----	---HIPLSG	LNSIIGRAVV	VHS---DPDD	LKGKGHELSK	TTGNAGGR--
<i>H. bra</i> (NW018745806.1-CSD)	-----	-----	---HIPLSG	PHSIAGRSVV	FHE---GRDD	LKGKGHELSK	ITGNAGDR--
<i>H. bra</i> (NW018746407.1-CSD)	-----	-----	---HIPLSG	PNSIIGRAVV	VHS---DTDD	LKGKGHELSK	TTGNAGGR--
<i>E. grandis</i> (Chr2-CSD)	-----	-----	---QIPLSG	PSSIVGRAVV	VHG---DPDD	LKGKGHELSK	TTGNAGGR--
<i>E. grandis</i> (Chr8-CSD)	-----	-----	---QIPLTG	PNSIVGRAVV	VHS---DPDD	LKGKGHELSK	TTGNAGGR--
<i>C. melo</i> (Sca3-CSD)	-----	-----	---QISLVG	RNSVLGRSIV	VHA---DPDD	LGRGGTELSL	TTGNAGER--
<i>C. melo</i> (Sca25-CSD)	-----	-----	---QISLCG	KDSIIGRAVV	VHG---DPDD	LKGKGHELSL	STGNAGAR--
<i>C. clementina</i> (Sca5-CSDa)	-----	-----	---LIPLVG	PNSIIGRSVV	IHD---KHDD	LKGKVNYSK	KNGNAGDK--
<i>C. clementina</i> (Sca5-CSDb)	-----	-----	---QIPLSG	PNSIIGRAVV	VHA---DPDD	LKGKNIIVFN	FRTLFFPKLN
<i>B. oleracea</i> (Chr5-CSD)	-----	-----	---QIPLSG	PNSIVGRAVV	VHA---DPDD	LKGKGHELSL	ATGNAGGR--
<i>B. oleracea</i> (Chr8-CSD)	-----	-----	---QIPLSG	PNSIVGRAVV	VHA---DPDD	LKGKGHELSL	STGNAGGR--
<i>A. chinensis</i> (Chr3-CSD)	-----	-----	---QIPLCG	PHSIIGRAVV	VHA---DPDD	LKGKGHELSK	TTGNAGGR--
<i>A. chinensis</i> (Chr29-CSD)	-----	-----	-----GRAVV	VHA---DPDD	LKGKGHELSK	STGNAGGR--	-----
<i>V. vinifera</i> (Chr14-CSDa)	-----	-----	---IPLTG	SNSIVGRAVV	VHA---DPDD	LKGKGHELSK	STGNAGGR--
<i>V. vinifera</i> (Chr14-CSDb)	-----	-----	---QIPLTG	SNSIVGRAVV	VHA---DPDD	LKGKGHELSK	STGNAGGR--
<i>M. domestica</i> (Bb4037-CSD)	-----	-----	---QIPLAG	PDSIIGRAVV	VHA---DPDD	LKGKGHELSK	STGNAGGR--
<i>M. domestica</i> (Bb6170-CSD)	-----	-----	---QIPLTG	PHSVIGRAVV	VHG---DPDD	LKGKGHELSK	STGNAGGR--
<i>T. has</i> (NW_010961290.1-CSD)	-----	-----	---QIPLAG	PNSIIGRAVV	VHA---DPDD	LKGKGHELSK	STGNAGGR--
<i>T. has</i> (NW_010966881.1-CSD)	-----	-----	---QIPLTG	PNSIIGRAVV	VHA---DPDD	LKGKGHELSK	STGNAGGR--
<i>G. max</i> (Chr3-CSD)	-----	-----	---QIPLTG	PNNIIGRAVV	VHA---DPDD	LKGKGHELSK	TTGNAGGR--
<i>G. max</i> (Chr19-CSD)	-----	-----	---QIPLTG	PNSIIGRAVV	VHA---DSDD	LKGKGHELSK	TTGNAGGR--
<i>B. rapa</i> (Chr6-CSD)	-----	-----	---QIPLSG	PNSIVGRAVV	VHA---DPDD	LKGKGHELSL	ATGNAGGR--
<i>B. rapa</i> (Chr9-CSD)	-----	-----	---QIPLTG	PNSIVGRAVV	VHA---ERDD	LKGKGHELSL	STGNAGGR--
<i>N. nucifera</i> (MScl3-CSD)	-----	-----	---QIPLSG	PNSIVGRAVV	VHA---DPDD	LKGKGHELSK	STGNAGGR--
<i>N. nucifera</i> (MSC9-CSD)	-----	-----	---QIPLTG	PYSIIGRAVV	VHA---DPDD	LKGKGHELSK	STGNAGGR--
<i>C. canephora</i> (Chr2-CSD)	-----	-----	---QIPLTG	PHSVVGRAVV	VHA---DPDD	LGRGGHELSK	TTGNAGGR--
<i>C. canephora</i> (Chr3-CSD)	-----	-----	---QIPLSG	PLSVIGRAVV	VHG---DPDD	LKGKGHELSK	TTGNAGGR--
<i>P. trichocarpa</i> (Chr5-CSD)	-----	-----	---QIPLTG	PHSIIGRAVV	VHG---DPDD	LKGKGHELSK	TTGNAGGR--
<i>P. trichocarpa</i> (Chr13-CSD)	-----	-----	---QIPLTG	PNSIVGRAVV	VHA---DPDD	LKGKGHELSK	TTGNAGGR--
<i>A. thaliana</i> -CSD	-----	-----	---QIPLTG	PNSIVGRAVV	VHA---DPDD	LKGKGHELSL	ATGNAGGR--
<i>P. axillaris</i> -CSD	-----	-----	---QIPLTG	PHSIIGRAVV	VHA---DPDD	LKGKGHELSK	TTGNAGGR--
<i>P. bretschneideri</i> -CSD	-----	-----	---QIPLTG	PHSIIGRAVV	VHS---DPDD	LKGKGHELSK	STGNAGGR--
<i>S. lycopersicum</i> -CSD	-----	-----	---QIPLTG	PQSIIGRAVV	VHA---DPDD	LKGKGHELSK	STGNAGGR--
<i>M. truncatula</i> -CSD	-----	-----	---QIPLTG	PNSIIGRAVV	VHA---DPDD	LKGKGHELSK	TTGNAGGR--
<i>V. radiata</i> -CSD	-----	-----	---QIPLTG	PNSIIGRAVV	VHA---DPDD	LKGKGHELSK	STGNAGGR--
<i>P. atrosanguinea</i> -CSD	-----	-----	---QIPLTG	PHSIIGRAVV	VHA---DPDD	LKGKGHELSK	STGNAGGR--
<i>C. limon</i> -CSD	-----	-----	---QIPLSG	PNSIIGRAVV	VHA---DPDD	LKGKGHELSK	TTGNAGGR--
<i>C. annuum</i> -CSD	-----	-----	---QIPLTG	PQSIIGRAVV	VHA---DPDD	LKGKGHELSK	TTGNAGGR--
<i>C. aromatica</i> -CSD	-----	-----	---QIPLTG	PHSIIGRAVV	VHA---DPDD	LKGKGHELSK	STGNAGGR--
<i>A. trichopoda</i> -CSD	-----	-----	---QIPLSG	PNSIIGRAVV	VHA---DPDD	LKGKGHELSK	TTGNAGGR--

Monocots

Dicots

	360	370	380	390	400	410	420
							
<i>O. sativa</i> (Chr3-CSD1)	-----	VAC	G	-----	-----	IIG	-----
<i>O. sativa</i> (Chr7-CSD4)	-----	VAC	G	-----	-----	IIG	-----
<i>O. brachyantha</i> (Chr3-CSD)	-----	VAC	G	-----	-----	VIG	-----
<i>O. brachyantha</i> (Chr7-CSD)	-----	VAC	G	-----	-----	IIG	-----
<i>S. italica</i> (Chr2-CSD)	-----	VAC	G	-----	-----	IIG	-----
<i>S. italica</i> (Chr9-CSD)	-----	IAC	G	-----	-----	IIG	-----
<i>S. bicolor</i> (Chr1-CSD)	-----	VAC	G	-----	-----	IIG	-----
<i>S. bicolor</i> (Chr2-CSD)	-----	VAC	G	-----	-----	IIG	-----
<i>E. guineensis</i> (Chr5-CSD)	-----	VAC	G	-----	-----	IIG	-----
<i>E. guineensis</i> (Chr14-CSD)	-----	VAC	G	-----	-----	IIG	-----
<i>O. thomaeum</i> (001-CSDa)	-----	VAC	G	-----	-----	IIG	-----
<i>O. thomaeum</i> (001-CSDb)	-----	VAC	G	-----	-----	IIG	-----
<i>O. thomaeum</i> (027-CSD)	-----	-----	-----	-----	-----	-----	-----
<i>Z. mays</i> (B73) (Chr7-CSD)	-----	VAC	GKLYRGVFPV	SWYHWAPRLK	QLTSEA--NT	IEG	-----
<i>Z. mays</i> (B73) (Chr9-CSD)	-----	--NSCWFSVC	TFRWARAQOE	HWKRRWPCC	LWDHWTPLKT	IAG	-----
<i>Z. mays</i> (PH207) (Chr1-CSD)	-----	VAC	G	-----	-----	IIG	-----
<i>Z. mays</i> (PH207) (Chr7-CSD)	-----	LDR	AFNFIGLI-F	ARYHWAPRLK	QLTSEA--NT	IEG	-----
<i>Z. mays</i> (PH207) (Chr9-CSD)	-----	VAC	G	-----	-----	IIG	-----
<i>C. americanus</i> (Chr5-CSD)	-----	IAC	G	-----	-----	MFTGSLAKLL	PDAPCHAIWN
<i>C. americanus</i> (Chr7-CSD)	-----	VAC	G	-----	-----	IIG	-----
<i>A. comosus</i> (LG4-CSD)	-----	VAC	E	-----	-----	G	-----
<i>A. comosus</i> (LG14-CSD)	-----	VAC	GGLLA	-----	-----	LLDFRCRPSS	YNTLTRSTLR
<i>M. acuminata</i> (Chr8-CSD)	-----	VAC	G	-----	-----	VIG	-----
<i>T. aestivum</i> (Ch2A-CSD)	-----	VAC	G	-----	-----	IIG	-----
<i>T. aestivum</i> (Ch2D-CSD)	-----	VAC	G	-----	-----	IIG	-----
<i>S. spontaneum</i> (Chr1B-CSD)	-----	VAC	G	-----	-----	IIG	-----
<i>S. spontaneum</i> (Chr1C-CSD)	-----	VAC	G	-----	-----	IIG	-----
<i>S. spontaneum</i> (Chr1D-CSD)	-----	VAC	G	-----	-----	IIG	-----
<i>S. spontaneum</i> (Chr2C-CSD)	-----	SCC	SISLV LAP	-----	-----	QFG	-----
<i>A. officinalis</i> (V102-CSD)	-----	VAC	G	-----	-----	IIG	-----
<i>A. officinalis</i> (V108-CSD)	-----	VGC	G	-----	-----	IIG	-----
<i>A. officinalis</i> (V103-CSD)	-----	EEL	A	-----	-----	VST	-----
<i>Z. japonica</i> (Sca0001-CSD)	-----	VAC	G	-----	-----	IIG	-----
<i>Z. japonica</i> (Sca0003.1-CSD)	LD	SRAERLL	PSPTDNVNAS	G	-----	HPK	-----
<i>H. vulgare</i> (Chr2-CSD)	-----	VAC	G	-----	-----	IIG	-----
<i>H. vulgare</i> (Chr5-CSD)	-----	CA	-----	-----	-----	-----	-----
<i>H. vulgare</i> (Chr5-CSDb)	-----	CA	-----	-----	-----	-----	-----
<i>C. sim</i> (Sca247-CSD)	-----	VAC	GG	-----	-----	FLG	-----
<i>C. sim</i> (Sca212-CSD)	-----	VAC	GG	-----	-----	FSG	-----
<i>B. distachyon</i> -CSD	-----	VAC	G	-----	-----	IIG	-----
<i>S. polyrhiza</i> -CSD	-----	VAC	G	-----	-----	VIG	-----
<i>P. glaucum</i> -CSD	-----	IAC	G	-----	-----	IIG	-----
<i>Z. marina</i> -CSD	-----	VAC	G	-----	-----	VIG	-----
<i>D. carota</i> (Chr1-CSD)	-----	VAC	G	-----	-----	IIG	-----
<i>D. carota</i> (Chr9-CSD)	-----	VAC	G	-----	-----	IIG	-----
<i>M. esculanta</i> (Chr8-CSD)	-----	VAC	G	-----	-----	VIG	-----
<i>M. esculanta</i> (Chr9-CSD)	-----	VAC	G	-----	-----	IIG	-----
<i>E. guttata</i> (Sca7-CSD)	-----	VAC	G	-----	-----	IIG	-----
<i>E. guttata</i> (Sca14-CSD)	-----	VAC	G	-----	-----	IIG	-----
<i>C. cajan</i> (LG03-CSDa)	-----	-----	-----	-----	-----	-----	-----
<i>C. cajan</i> (LG03-CSDb)	-----	-----	-----	-----	-----	-----	-----
<i>C. cajan</i> (SC130189-CSD)	-----	VAC	G	-----	-----	KRR	-----
<i>H. bra</i> (NW018746327.1-CSD)	-----	AAC	G	-----	-----	IIG	-----
<i>H. bra</i> (NW018745806.1-CSD)	-----	IAC	G	-----	-----	IIG	-----
<i>H. bra</i> (NW018746407.1-CSD)	-----	AAC	G	-----	-----	IIG	-----
<i>E. grandis</i> (Chr2-CSD)	-----	VAC	G	-----	-----	VIG	-----
<i>E. grandis</i> (Chr8-CSD)	-----	VAC	G	-----	-----	LSC	-----
<i>C. melo</i> (Sca3-CSD)	-----	IGC	GSD	-----	-----	VIG	-----
<i>C. melo</i> (Sca25-CSD)	-----	VAC	G	-----	-----	MY	-----
<i>C. clementina</i> (Sca5-CSDa)	-----	IAC	G	-----	-----	VIG	-----
<i>C. clementina</i> (Sca5-CSDb)	-----	ILGC	C	-----	-----	FVY	-----
<i>B. oleracea</i> (Chr5-CSD)	-----	VAC	G	-----	-----	IIG	-----
<i>B. oleracea</i> (Chr8-CSD)	-----	VAC	G	-----	-----	IIG	-----
<i>A. chinensis</i> (Chr3-CSD)	-----	VAC	DGETGA	-----	-----	ILS	-----
<i>A. chinensis</i> (Chr29-CSD)	-----	LAC	G	-----	-----	VIG	-----
<i>V. vinifera</i> (Chr14-CSDa)	-----	VAC	G	-----	-----	VIG	-----
<i>V. vinifera</i> (Chr14-CSDb)	-----	VAC	G	-----	-----	VIG	-----
<i>M. domestica</i> (Bb4037-CSD)	-----	VAC	G	-----	-----	ILW	-----
<i>M. domestica</i> (Bb6170-CSD)	-----	VVL	V	-----	-----	VLS	-----
<i>T. has</i> (NW_010961290.1-CSD)	-----	VAC	G	-----	-----	IIG	-----
<i>T. has</i> (NW_010966881.1-CSD)	-----	VAC	G	-----	-----	IIG	-----
<i>G. max</i> (Chr3-CSD)	-----	VAC	G	-----	-----	IIG	-----
<i>G. max</i> (Chr19-CSD)	-----	VAC	G	-----	-----	IIG	-----
<i>B. rapa</i> (Chr6-CSD)	-----	VAC	G	-----	-----	IIG	-----
<i>B. rapa</i> (Chr9-CSD)	-----	VAC	G	-----	-----	IIG	-----
<i>N. nucifera</i> (MSc13-CSD)	-----	VAC	G	-----	-----	IIG	-----
<i>N. nucifera</i> (MSc9-CSD)	-----	VAC	G	-----	-----	IIG	-----
<i>C. canephora</i> (Chr2-CSD)	-----	VAC	G	-----	-----	VIG	-----
<i>C. canephora</i> (Chr3-CSD)	-----	VAC	G	-----	-----	IIG	-----
<i>P. trichocarpa</i> (Chr5-CSD)	-----	VAC	G	-----	-----	IIG	-----
<i>P. trichocarpa</i> (Chr13-CSD)	-----	VAC	G	-----	-----	VIG	-----
<i>A. thaliana</i> -CSD	-----	VAC	G	-----	-----	IIG	-----
<i>P. axillaris</i> -CSD	-----	VAC	G	-----	-----	IIG	-----
<i>P. bretschneideri</i> -CSD	-----	VAC	G	-----	-----	IIG	-----
<i>S. lycopersicum</i> -CSD	-----	IAC	G	-----	-----	IIG	-----
<i>M. truncatula</i> -CSD	-----	VAC	G	-----	-----	IIG	-----
<i>V. radiata</i> -CSD	-----	VAC	G	-----	-----	IIG	-----
<i>P. atrosanguinea</i> -CSD	-----	IAC	G	-----	-----	IIG	-----
<i>C. limon</i> -CSD	-----	VAC	G	-----	-----	IIG	-----
<i>C. annuum</i> -CSD	-----	VAC	G	-----	-----	IIG	-----
<i>C. aromatica</i> -CSD	-----	IAC	G	-----	-----	IIG	-----
<i>A. trichopoda</i> -CSD	-----	VAC	G	-----	-----	IIG	-----

————— #12 —————>

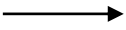
<————— #13 —————>

Monocots

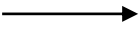
Dicots

	430	440	450	460	470
					
<i>O. sativa</i> (Chr3-CSD1)	-----	LQG	-----	-----	-----
<i>O. sativa</i> (Chr7-CSD4)	-----	LQG	-----	-----	-----
<i>O. brachyantha</i> (Chr3-CSD)	-----	LQG	-----	-----	-----
<i>O. brachyantha</i> (Chr7-CSD)	-----	LQG	-----	-----	-----
<i>S. italica</i> (Chr2-CSD)	-----	LQG	-----	-----	-----
<i>S. italica</i> (Chr9-CSD)	-----	LQG	-----	-----	-----
<i>S. bicolor</i> (Chr1-CSD)	-----	LQG	-----	-----	-----
<i>S. bicolor</i> (Chr2-CSD)	-----	LQG	-----	-----	-----
<i>E. guineensis</i> (Chr5-CSD)	-----	LQA	-----	-----	-----
<i>E. guineensis</i> (Chr14-CSD)	-----	LQA	-----	-----	-----
<i>O. thomaeum</i> (001-CSDa)	-----	LQG	-----	-----	-----
<i>O. thomaeum</i> (001-CSDb)	-----	LQG	-----	-----	-----
<i>O. thomaeum</i> (027-CSD)	-----	-----	-----	-----	-----
<i>Z. mays</i> (B73) (Chr7-CSD)	-----	RSEH LRMLLFHFPC	IGNTI	-----	-----
<i>Z. mays</i> (B73) (Chr9-CSD)	-----	LGGA	-----	-----	-----
<i>Z. mays</i> (PH207) (Chr1-CSD)	-----	LQG	-----	-----	-----
<i>Z. mays</i> (PH207) (Chr7-CSD)	-----	RSEH LRMLLFHFPC	IGNTI	-----	-----
<i>Z. mays</i> (PH207) (Chr9-CSD)	-----	LQG	-----	-----	-----
<i>C. americanus</i> (Chr5-CSD)	SFFDKLLHLL	IALCYCFQGS	LDFRAEAESV	R	-----
<i>C. americanus</i> (Chr7-CSD)	-----	RQG	-----	-----	-----
<i>A. comosus</i> (LG4-CSD)	-----	-----	-----	-----	-----
<i>A. comosus</i> (LG14-CSD)	AQGSARLVPD	TEESKAKNNN	LLILWNYHCW	GTKAYA	-----
<i>M. acuminata</i> (Chr8-CSD)	-----	LQE	-----	-----	-----
<i>T. aestivum</i> (Ch2A-CSD)	-----	LQG	-----	-----	-----
<i>T. aestivum</i> (Ch2D-CSD)	-----	LQG	-----	-----	-----
<i>S. spontaneum</i> (Chr1B-CSD)	-----	LQG	-----	-----	-----
<i>S. spontaneum</i> (Chr1C-CSD)	-----	LQG	-----	-----	-----
<i>S. spontaneum</i> (Chr1D-CSD)	-----	LQG	-----	-----	-----
<i>S. spontaneum</i> (Chr2C-CSD)	-----	YSK	-----	-----	-----
<i>A. officinalis</i> (V102-CSD)	-----	LQA	-----	-----	-----
<i>A. officinalis</i> (V108-CSD)	-----	LQA	-----	-----	-----
<i>A. officinalis</i> (V103-CSD)	-----	IKAS	SPKLTILYKI	IYIFYLPGNF	KLFV
<i>Z. japonica</i> (Sca0001-CSD)	-----	LQG	-----	-----	-----
<i>Z. japonica</i> (Sca0003.1-CSD)	-----	IKEQ	T	-----	-----
<i>H. vulgare</i> (Chr2-CSD)	-----	LQG	-----	-----	-----
<i>H. vulgare</i> (Chr5-CSD)	-----	-----	-----	-----	-----
<i>H. vulgare</i> (Chr5-CSDb)	-----	-----	-----	-----	-----
<i>C. sim</i> (Sca247-CSD)	-----	YLH	-----	TCDAC	-----
<i>C. sim</i> (Sca212-CSD)	-----	TLYR	MLFFSYFVLL	TWELHSS	-----
<i>B. distachyon</i> -CSD	-----	LQG	-----	-----	-----
<i>S. polyrhiza</i> -CSD	-----	LQA	-----	-----	-----
<i>P. glaucum</i> -CSD	-----	LQG	-----	-----	-----
<i>Z. marina</i> -CSD	-----	LKG	-----	-----	-----
<i>D. carota</i> (Chr1-CSD)	-----	LQG	-----	-----	-----
<i>D. carota</i> (Chr9-CSD)	-----	LQG	-----	-----	-----
<i>M. esculanta</i> (Chr8-CSD)	-----	LQG	-----	-----	-----
<i>M. esculanta</i> (Chr9-CSD)	-----	LQG	-----	-----	-----
<i>E. guttata</i> (Sca7-CSD)	-----	IQG	-----	-----	-----
<i>E. guttata</i> (Sca14-CSD)	-----	LQG	-----	-----	-----
<i>C. cajan</i> (LG03-CSDa)	-----	-----	-----	-----	-----
<i>C. cajan</i> (LG03-CSDb)	-----	-----	-----	-----	-----
<i>C. cajan</i> (SC130189-CSD)	-----	L	-----	-----	-----
<i>H. bra</i> (NW018746327.1-CSD)	-----	LQG	-----	-----	-----
<i>H. bra</i> (NW018745806.1-CSD)	-----	LQE	-----	-----	-----
<i>H. bra</i> (NW018746407.1-CSD)	-----	LQG	-----	-----	-----
<i>E. grandis</i> (Chr2-CSD)	-----	LQG	-----	-----	-----
<i>E. grandis</i> (Chr8-CSD)	-----	SMGM	ISVSSVFRDE	LPQSTT	-----
<i>C. melo</i> (Sca3-CSD)	-----	LQE	-----	-----	-----
<i>C. melo</i> (Sca25-CSD)	-----	WSAR	LRFVAFVAVS	IEALNPNAI	-----
<i>C. clementina</i> (Sca5-CSDa)	-----	LQA	-----	-----	-----
<i>C. clementina</i> (Sca5-CSDb)	-----	IQLN	-----	-----	-----
<i>B. oleracea</i> (Chr5-CSD)	-----	LQG	-----	-----	-----
<i>B. oleracea</i> (Chr8-CSD)	-----	LQG	-----	-----	-----
<i>A. chinensis</i> (Chr3-CSD)	-----	FHDV	YVLFWHRPPL	LLPNCLVL	-----
<i>A. chinensis</i> (Chr29-CSD)	-----	LQG	-----	-----	-----
<i>V. vinifera</i> (Chr14-CSDa)	-----	LQG	-----	-----	-----
<i>V. vinifera</i> (Chr14-CSDb)	-----	LQG	-----	-----	-----
<i>M. domestica</i> (Bb4037-CSD)	-----	SARD	ELEHYAMDME	FQLSVLSSCK	FEGNRSNWF E
<i>M. domestica</i> (Bb6170-CSD)	-----	VCKD	ELEHQAKRHG	VSVKCM	K FL
<i>T. has</i> (NW_010961290.1-CSD)	-----	LQG	-----	-----	-----
<i>T. has</i> (NW_010966881.1-CSD)	-----	LQG	-----	-----	-----
<i>G. max</i> (Chr3-CSD)	-----	LQG	-----	-----	-----
<i>G. max</i> (Chr19-CSD)	-----	LQG	-----	-----	-----
<i>B. rapa</i> (Chr6-CSD)	-----	LQG	-----	-----	-----
<i>B. rapa</i> (Chr9-CSD)	-----	LQG	-----	-----	-----
<i>N. nucifera</i> (MSc13-CSD)	-----	LQG	-----	-----	-----
<i>N. nucifera</i> (MSc9-CSD)	-----	LQG	-----	-----	-----
<i>C. canephora</i> (Chr2-CSD)	-----	LQG	-----	-----	-----
<i>C. canephora</i> (Chr3-CSD)	-----	LQG	-----	-----	-----
<i>P. trichocarpa</i> (Chr5-CSD)	-----	LQG	-----	-----	-----
<i>P. trichocarpa</i> (Chr13-CSD)	-----	LQG	-----	-----	-----
<i>A. thaliana</i> -CSD	-----	LQG	-----	-----	-----
<i>P. axillaris</i> -CSD	-----	LQG	-----	-----	-----
<i>P. bretschneideri</i> -CSD	-----	LQG	-----	-----	-----
<i>S. lycopersicum</i> -CSD	-----	LQG	-----	-----	-----
<i>M. truncatula</i> -CSD	-----	LQG	-----	-----	-----
<i>V. radiata</i> -CSD	-----	LQG	-----	-----	-----
<i>P. atrosanguinea</i> -CSD	-----	LQG	-----	-----	-----
<i>C. limon</i> -CSD	-----	LQG	-----	-----	-----
<i>C. annuum</i> -CSD	-----	LQG	-----	-----	-----
<i>C. aromatica</i> -CSD	-----	LQG	-----	-----	-----
<i>A. trichopoda</i> -CSD	-----	LQG	-----	-----	-----

#14

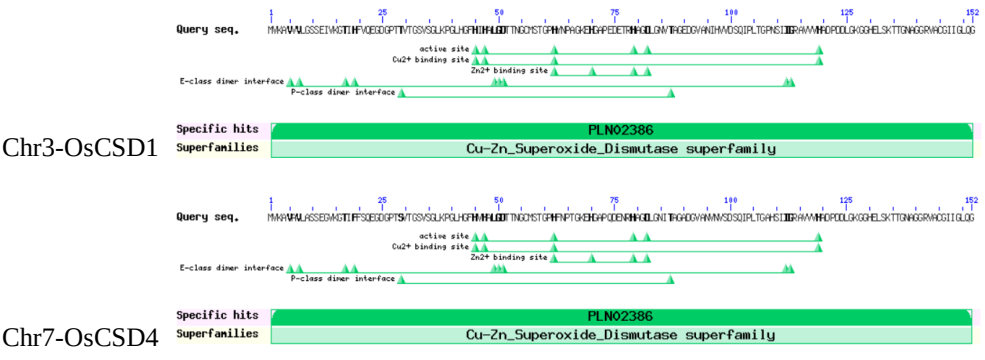


#15

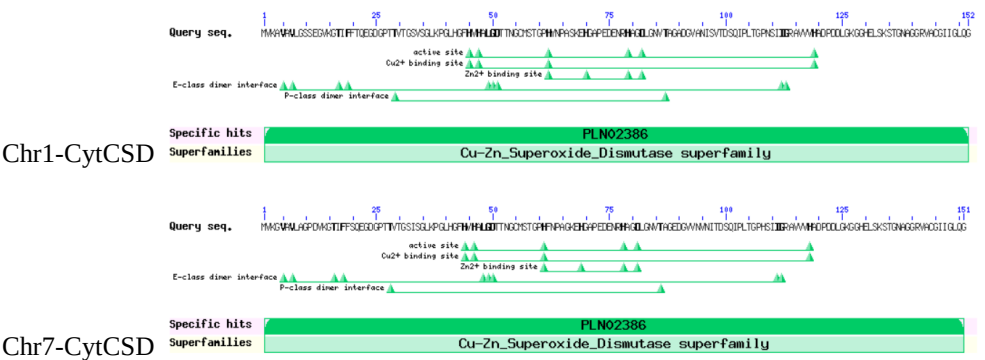


Supplementary Figure 8: Analysis of domains/important features of the proteins encoded by CuZn SOD (CSD) genes originated due to block/tandem chromosomal duplication events in monocot plant genomes. The duplication events were analyzed at Monocots PLAZA 4.5 database (Bel et al., 2018), while the analysis of conserved domains was carried out at Conserved Domain Database (CDD, <https://www.ncbi.nlm.nih.gov/structure/cdd/>). Following designation for genes is used below for different SOD isoforms; CytCSD: cytosolic CuZn SOD, ChlCSD: chloroplastic CuZn SOD and PerCSD: peroxisomal CuZn SOD. The designation used to indicate genomic locations (chromosome, scaffold, linkage group etc.) are as per the PLAZA database (Chr: chromosome, Sca: Scaffold, MSca: Megascaffold, LG: Linkage groups etc. Domains, and important amino acids are indicated.

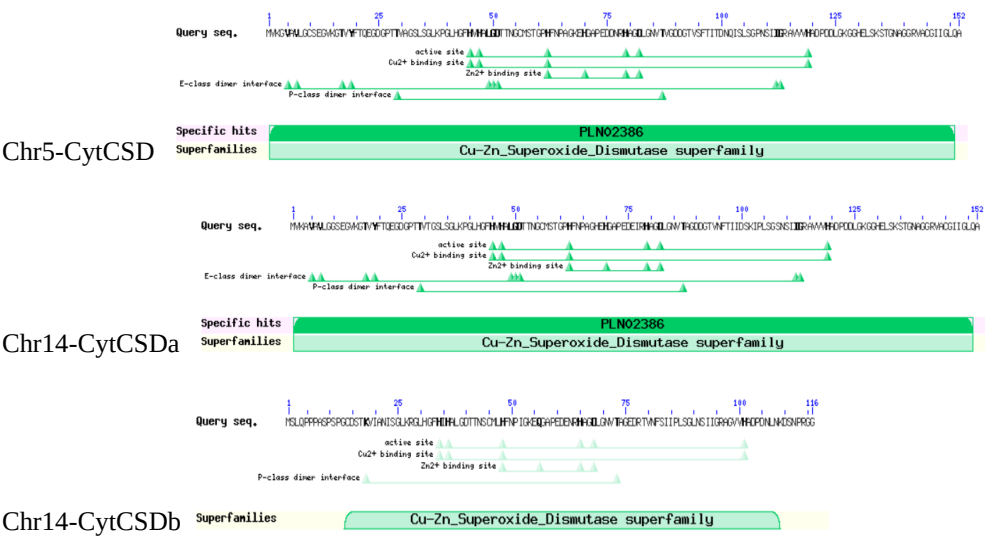
A) ***Oryza sativa***: Domain analysis of two cytosolic CSDs (CytCSDs: OsCSD1, OsCSD4) originated in due to a block duplication event between Chr3 and Chr7



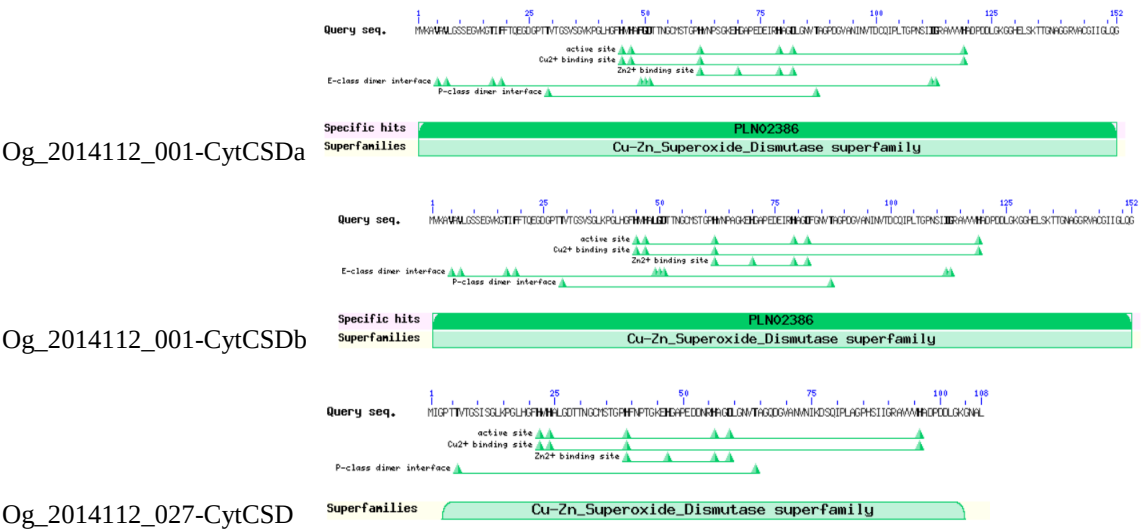
D) *Sorghum bicolor*: Domain analysis of two cytosolic CSDs (CytCSDs) originated due to a block duplication event between Chr1 and Chr2.



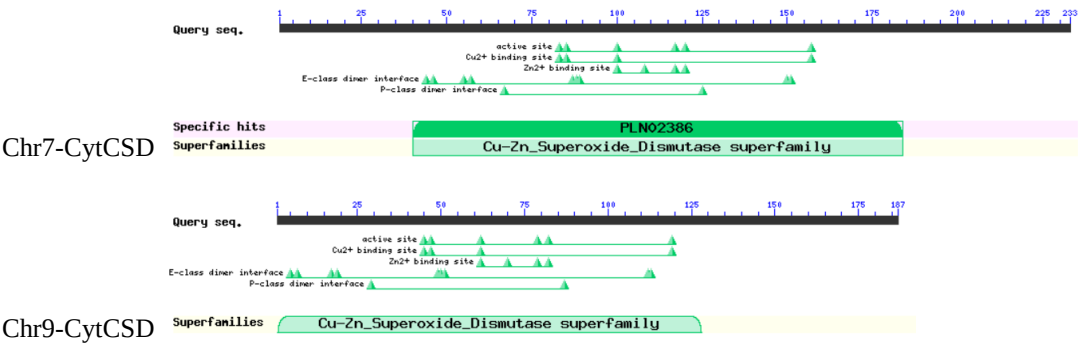
E) *Elaeis guineensis*: Domain analysis of three cytosolic CSDs (CytCSDs) originated due to two block duplication between Chr5 and Chr14.



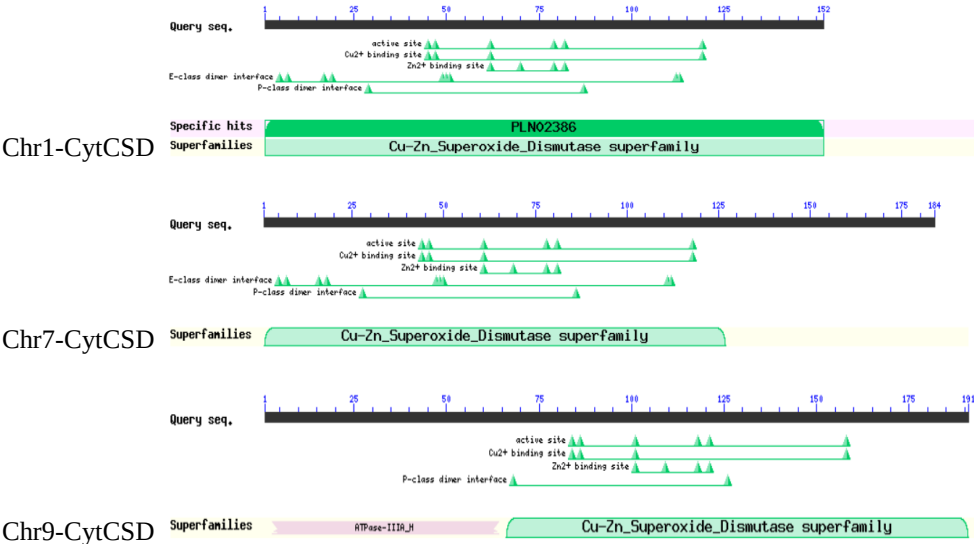
F) *Oropetium thomaeum*: Domain analysis of three cytosolic CSDs (CytCSDs) originated due to a block duplication event between chromosome Og_2014112_001 and Og_2014112_027, and a tandem duplication event (gene ids: Oropetium_20150105_01325 and Oropetium_20150105_01319) within chromosome Og_2014112_001



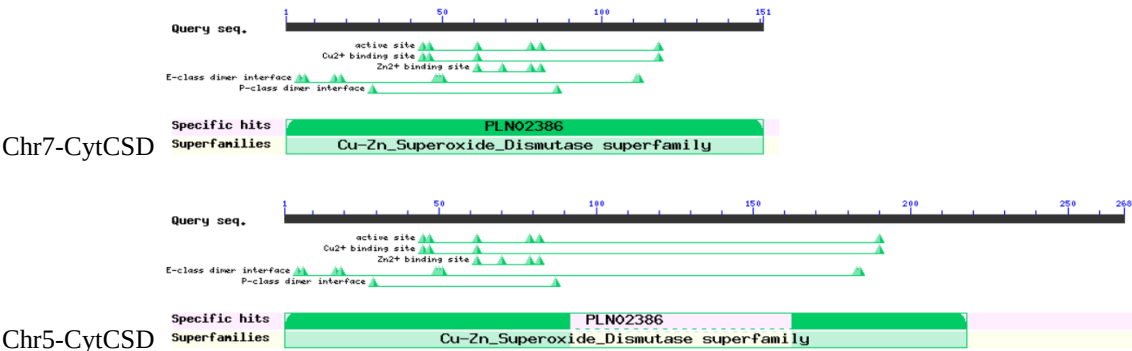
G) ***Zea mays* (B73)**: Domain analysis of two cytosolic CSDs (CytCSDs) originated due to a block duplication event between Chr7 and Chr9.



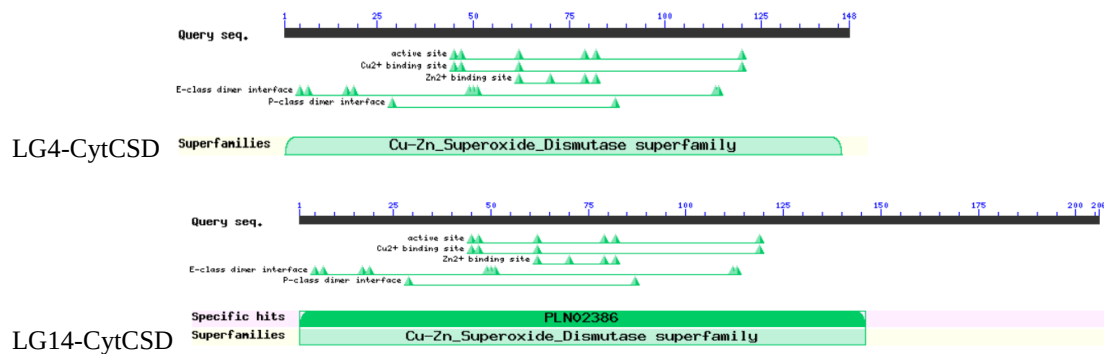
H) ***Zea mays* (PH207)**: Domain analysis of three cytosolic CSDs (CytCSDs) originated due to two block duplication events (between Chr1 and Chr9; Chr7 and Chr9).



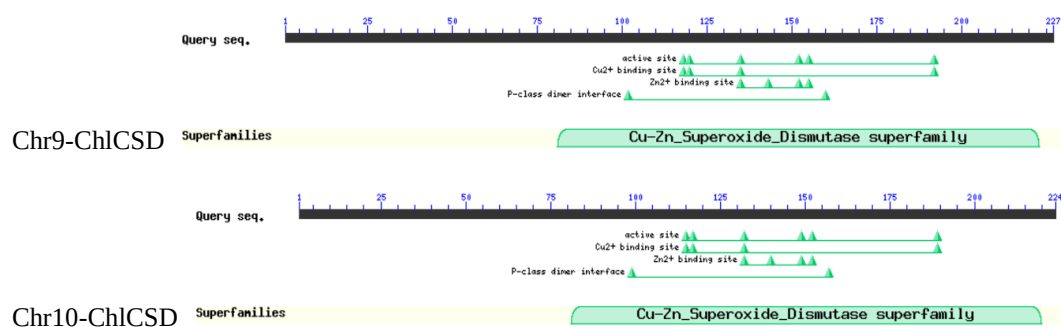
I) ***Cenchrus americanus***: Domain analysis of two cytosolic CSDs (CytCSDs) originated due to a block duplication event between Chr7 and Chr5.



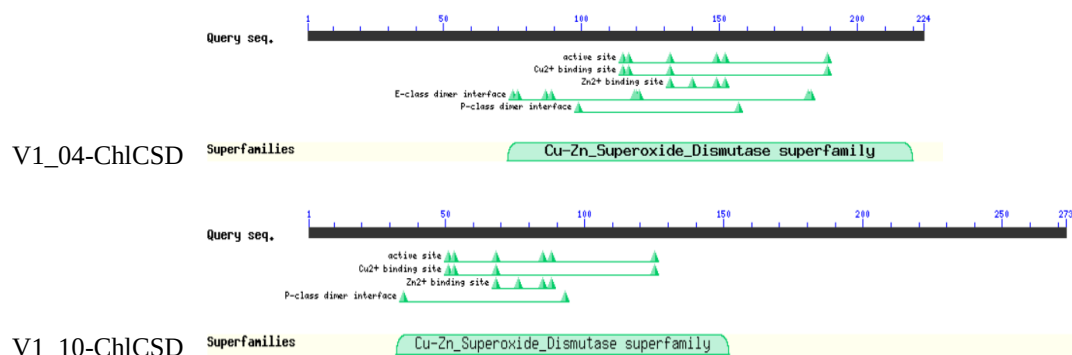
J) ***Ananas comosus***: Domain analysis of two cytosolic CSDs (CytCSDs) originated due to a block duplication event between LG4 and LG14.



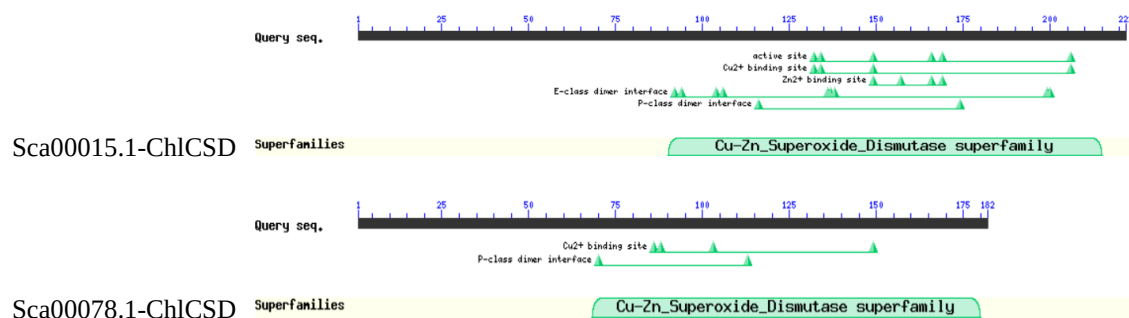
- K) ***Musa acuminata***: Domain analysis of two chloroplastic CSDs (ChlCSDs) originated due to a block duplication between Sca00015.1 and Sca00078.1.



- L) ***Asparagus officinalis***: Domain analysis of two chloroplastic CSDs (ChlCSDs) originated due to a block duplication between chromosome number V1_04 and V1_10.

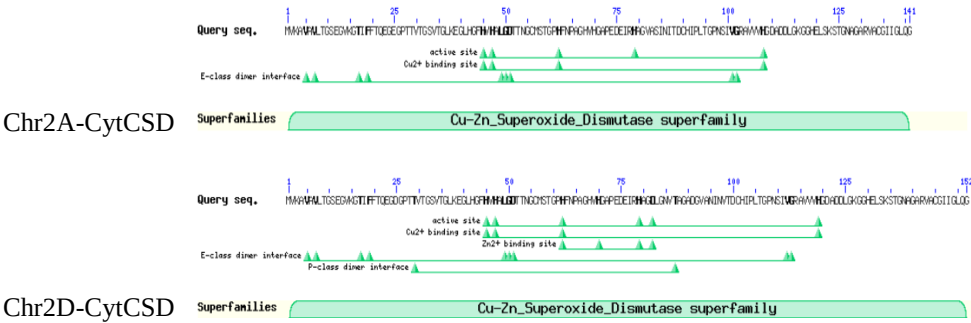


- M) ***Zoysia japonica ssp. nagirizaki***: Domain analysis of two chloroplastic CSDs (ChlCSDs) originated due to a block duplication event between chromosome number Sca00015.1 and Sca00078.1.

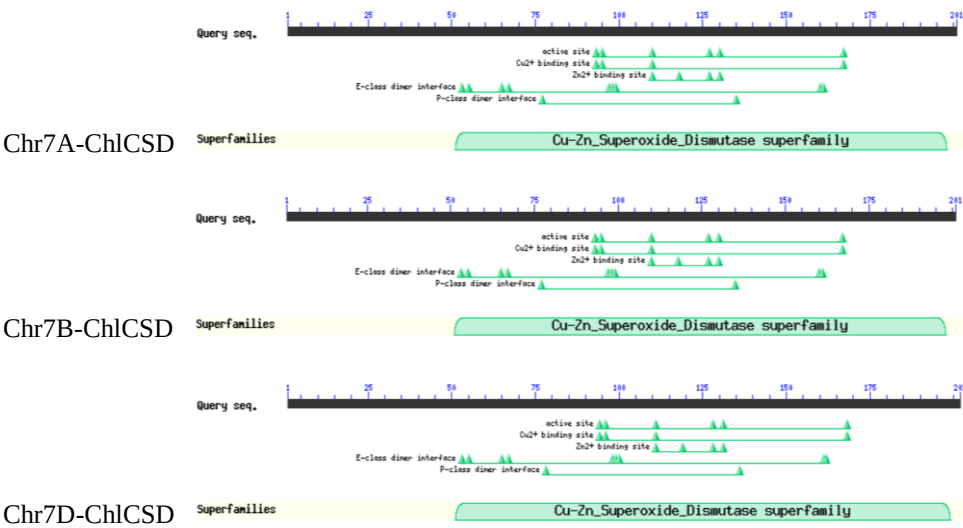


N) *Triticum aestivum*:

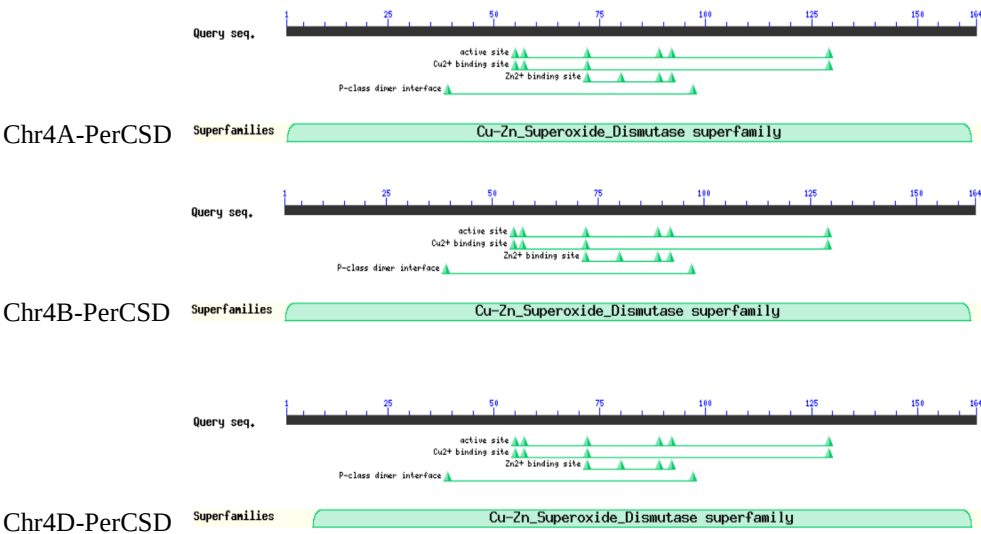
i) Domain analysis of two cytosolic CSDs (CytCSDs) originated due to a block duplication between chromosome Chr2A and Chr2D.



ii) Domain analysis of three chloroplastic CSDs (ChlCSDs) originated due to block duplication events between chromosome Chr7A, Chr7B and Chr7D.

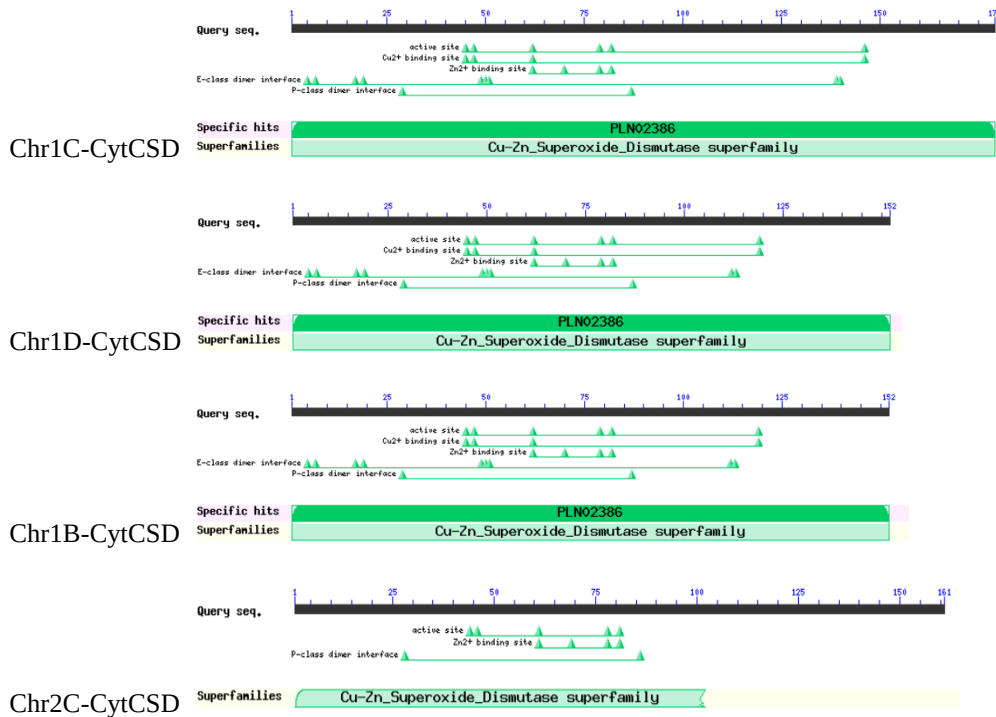


iii) Domain analysis of three peroxisomal CSDs (PerCSDs) due to block duplication events between chromosome Chr4A, Chr4B and Chr4D.

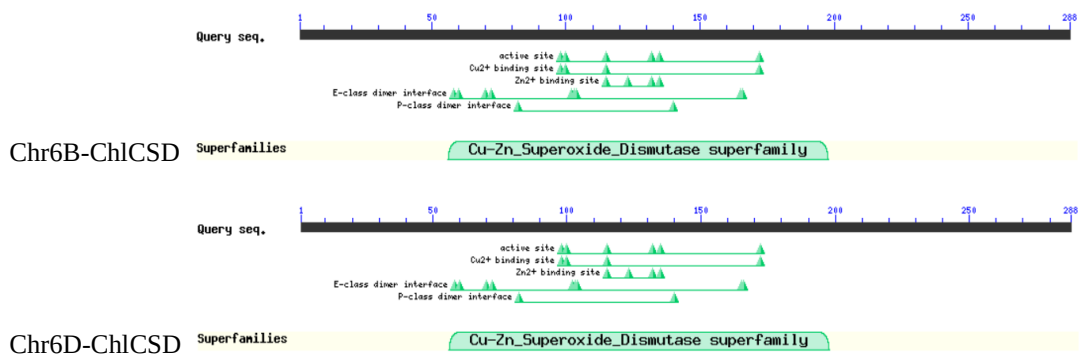


O) *Saccharum spontaneum*:

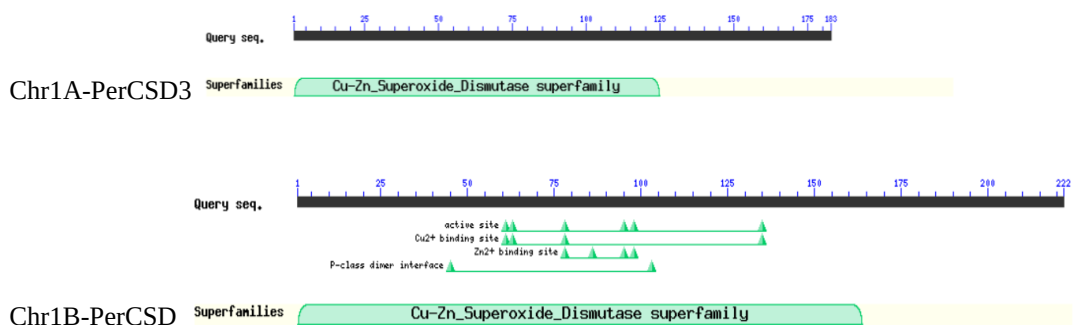
- i) Domain analysis of four cytosolic CSDs (CytCSDs) originated due to block duplication events involving four chromosomes (Chr1B, IC, ID, and 2C).

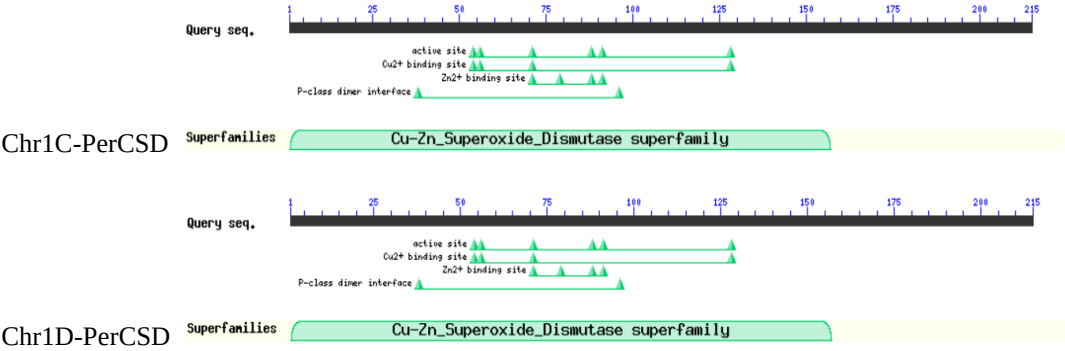


- ii) Domain analysis of two chloroplastic CSDs (ChlCSDs) originated due to a block duplication involving events between Chr6B and Chr6D.



- iii) Domain analysis of four peroxisomal CSDs (PerCSDs) originated due to block duplication events involving four chromosomes (Chr1A, 1B, 1C, and 1D).



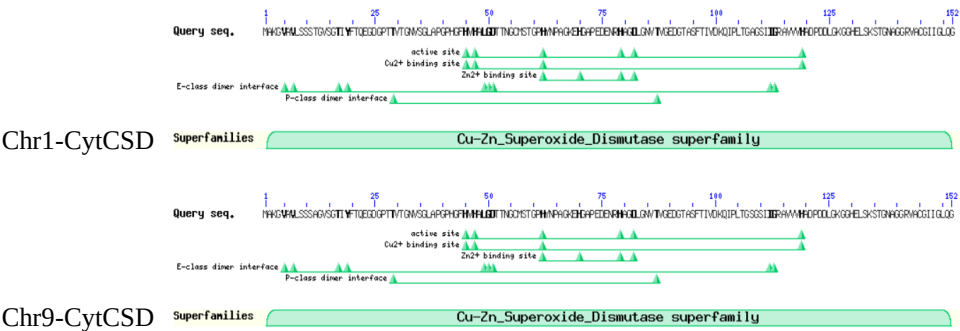


P) *Hordeum vulgare*: Domain analysis of three cytosolic CSDs (CytCSD) present in the genome. No block/tandem duplication events predicted

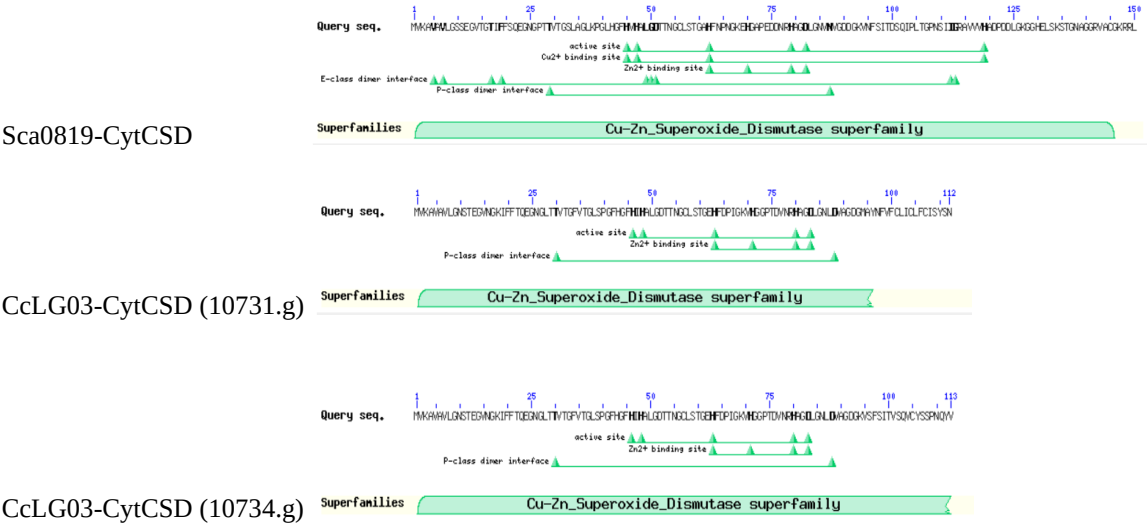


Supplementary Figure 9: Analysis of domains/important features of the proteins encoded by CuZn SOD (CSD) genes originated due to block/tandem chromosomal duplication events in dicot plant genomes. The duplication events were analyzed at Monocots PLAZA 4.5 database (Bel et al., 2018), while the analysis of conserved domains was carried out at Conserved Domain Database (CDD, <https://www.ncbi.nlm.nih.gov/structure/cdd/>). Following designation for genes is used below for different SOD isoforms; CytCSD: cytosolic CuZn SOD, ChlCSD: chloroplastic CuZn SOD and PerCSD: peroxisomal CuZn SOD. The designation used to indicate genomic locations (chromosome, scaffold, linkage group etc.) are as per the PLAZA database (Chr: chromosome, Sca: Scaffold, MSca: Megasccaffold, LG: Linkage groups etc. Domains, and important amino acids are indicated.

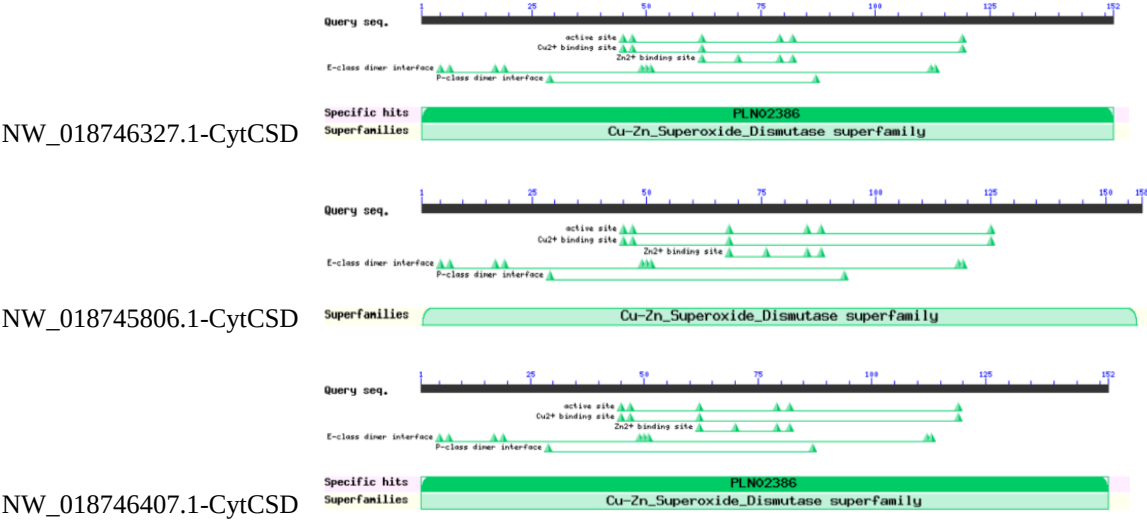
A) *Daucus carota*: Domain analysis of two cytosolic CSDs (CytCSDs) originated in due to a block duplication event between Chr1 and Chr9.



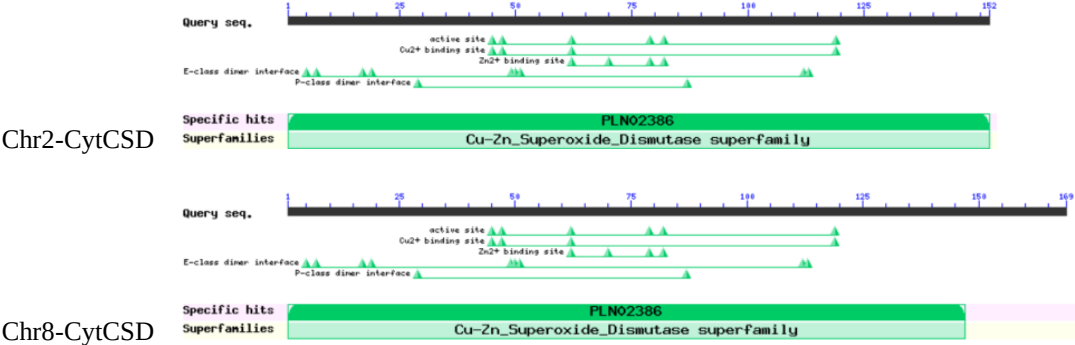
D) *Cajanus cajan*: Domain analysis of two cytosolic CSDs (CytCSDs) originated in due to a tandem duplication event within chromosome CcLG03 (gene ids: 10731.g and 10734.g). Another CytCSD on chromosome Sca0819 (gene id: g.4037.5) does not show evidence of any duplication event.



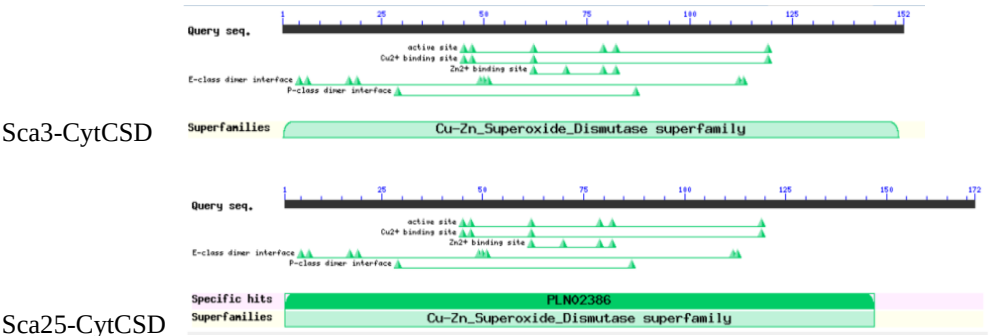
E) *Hevea brasiliensis*: Domain analysis of three cytosolic CSDs (CytCSDs) originated due to a block duplication events between chromosomes NW_018746327.1, NW_018745806.1 and NW_018746407.1



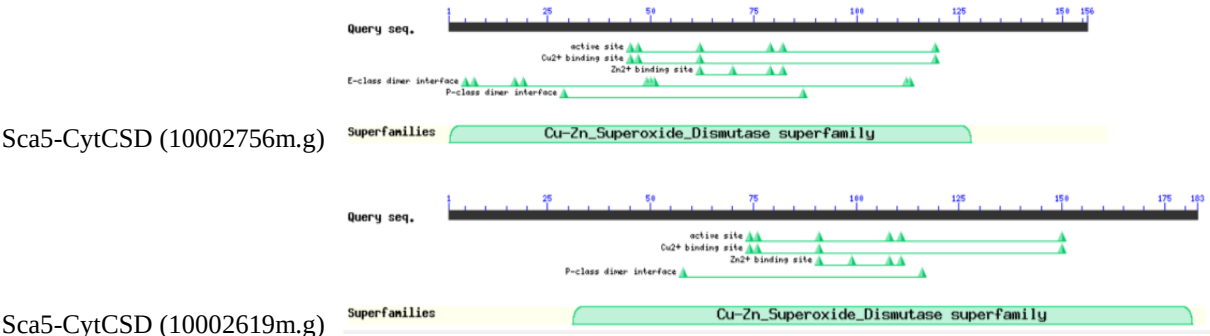
F) *Eucalyptus grandis*: Domain analysis of two cytosolic CSDs (CytCSDs) originated in due to a block duplication event between chromosome Chr2 and Chr8.



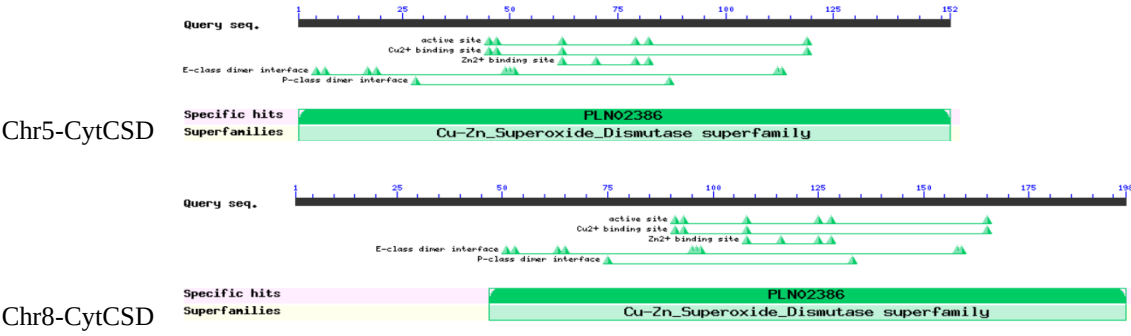
G) *Cucumis melo*: Domain analysis of two cytosolic CSDs (CytCSDs) originated due to a block duplication between chromosomes Sca3 and Sca25.



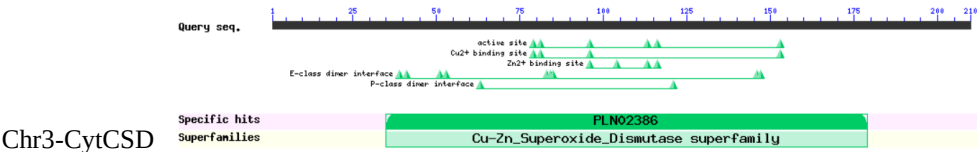
H) *Citrus clementina*: Domain analysis of two cytosolic CSDs (CytCSDs) originated due to a tandem duplication event (gene ids: Ciclev10002756m.g and Ciclev10002619m.g) within chromosome Sca5.

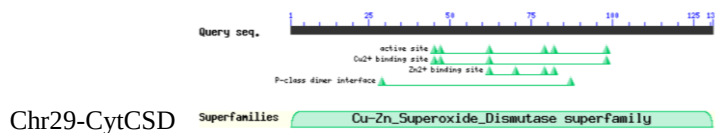


I) *Brassica oleracea*: Domain analysis of two cytosolic CSDs (CytCSDs) originated due to a block duplication event between Chr5 and Chr8.

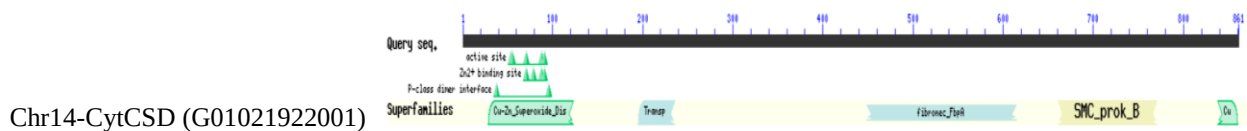
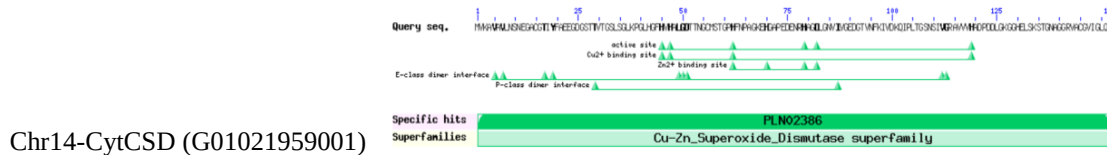


J) *Actinidia chinensis*: Domain analysis of two cytosolic CSDs (CytCSDs) originated in due to a tandem duplication event between Chr3 and Chr29.

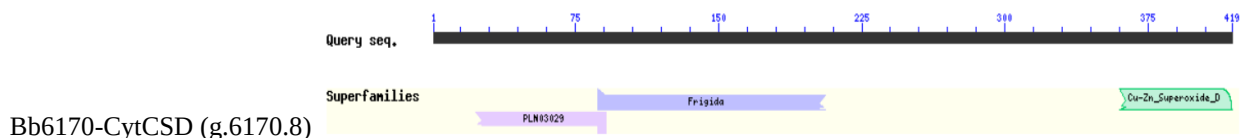
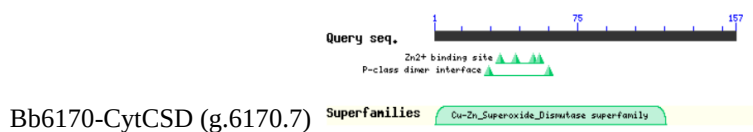
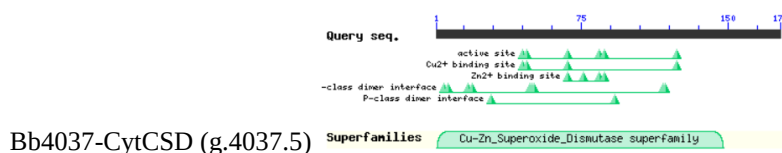




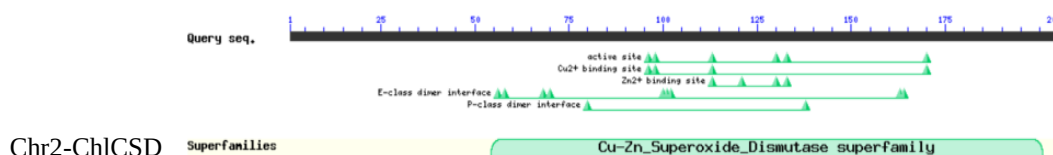
K) *Vitis vinifera*: Domain analysis of three cytosolic CSDs (CytCSDs) originated due to tandem duplication events (gene ids: GSVIVG01021922001, GSVIVG01021949001 and GSVIVG01021959001) within chromosome Chr14.

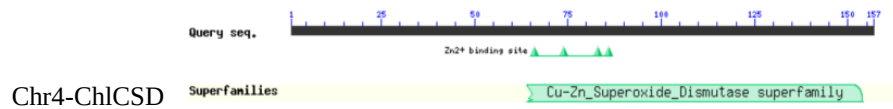


L) *Malus domestica*: Domain analysis of two cytosolic CSDs (CytCSDs) originated in due to a tandem duplication event within chromosome backbone Bb6170 (gene ids: g.6170.7 and g.6170.8). Another CytCSD on chromosome backbone Bb4037 (gene id: g.4037.5) shows no indication of any duplication event.

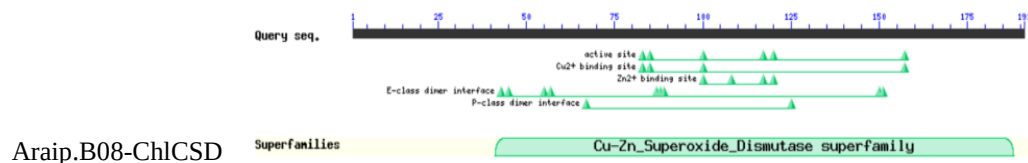
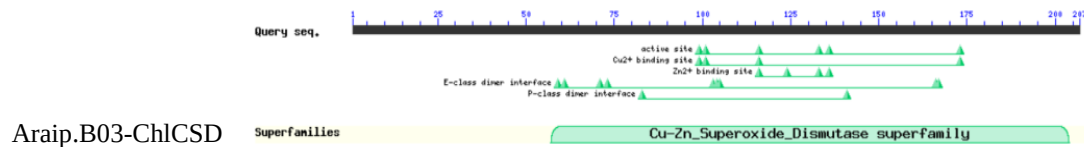


M) *Vigna radiata var. radiata*: Domain analysis of two chloroplastic CSDs (ChlCSD) originated due to a block duplication between chromosome Chr2 and Chr4.



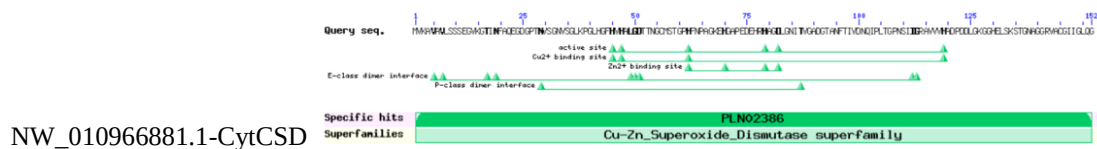
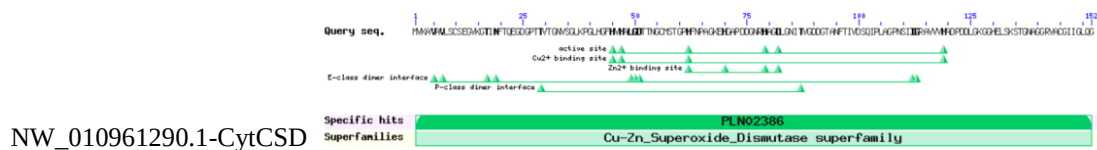


N) *Arachis ipaensis*: Domain analysis of two chloroplastic CSDs (ChlCSDs) originated due to a block duplication event between chromosome Araip.B03 and Araip.B08.

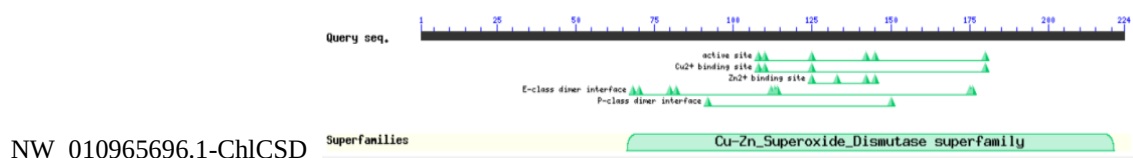
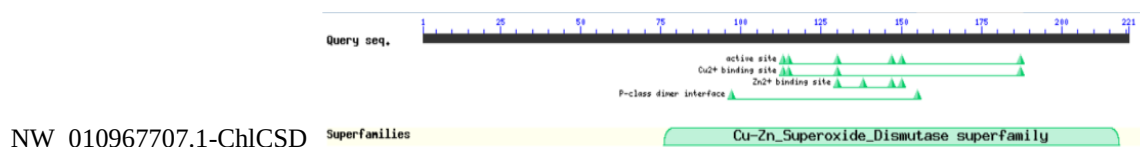


O) *Tarenaya hassleriana*:

i) Domain analysis of two cytosolic CSDs (CytCSD) originated due to a block duplication event between chromosome NW_010961290.1 and NW_010966881.1.

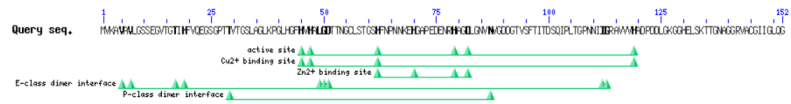


ii) Domain analysis of two chloroplastic CSDs (ChlCSDs) originated due to a block duplication event between chromosome NW_010967707.1 and NW_010965696.1.



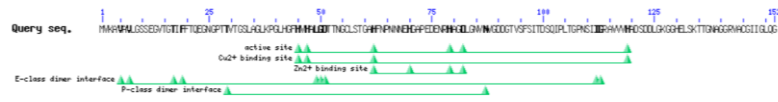
P) *Glycine max*:

i) Domain analysis of two cytosolic CSDs (CytCSD) originated due to a block duplication event between Chromosome Chr3 and Chr19.



Chr3-CytCSD

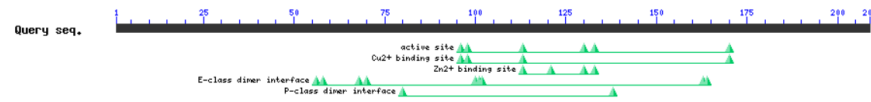
Superfamilies **Cu-Zn_Superoxide_Dismutase superfamily**



Chr19-CytCSD

Superfamilies **Cu-Zn_Superoxide_Dismutase superfamily**

- ii) Domain analysis of three chloroplastic CSDs (ChlCSDs) originated due to two block duplication events between Chromosome Chr11 and Chr12.



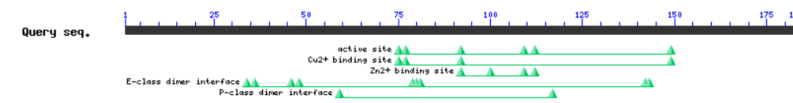
Chr11-ChlCSD

Superfamilies **Cu-Zn_Superoxide_Dismutase superfamily**



Chr12-ChlCSDa

Superfamilies **Cu-Zn_Superoxide_Dismutase superfamily**

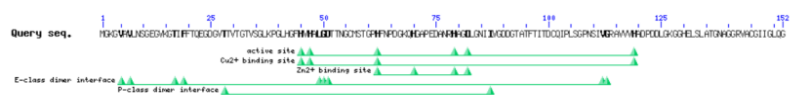


Chr12-ChlCSDb

Superfamilies **Cu-Zn_Superoxide_Dismutase superfamily**

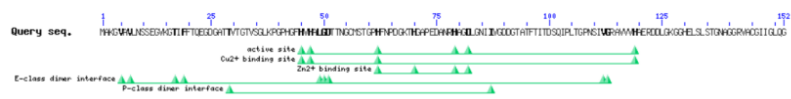
Q) *Brassica rapa*:

- i) Domain analysis of two cytosolic CSDs (CytCSDs) originated due to a block duplication event between chromosome Chr6 and Chr9



Chr6-CytCSD

Specific hits **PLN02386**
Superfamilies **Cu-Zn_Superoxide_Dismutase superfamily**



Chr9-CytCSD

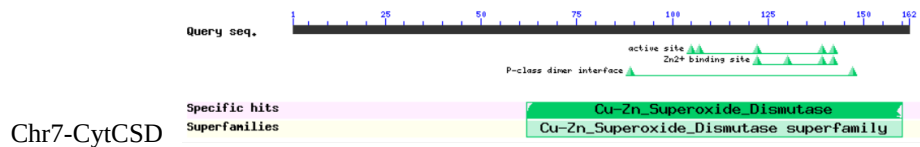
Specific hits **PLN02386**
Superfamilies **Cu-Zn_Superoxide_Dismutase superfamily**

- ii) *Brassica rapa*: Domain analysis of two chloroplastic CSDs (ChlCSDs) originated due to a block duplication event between chromosome Chr4 and Chr7



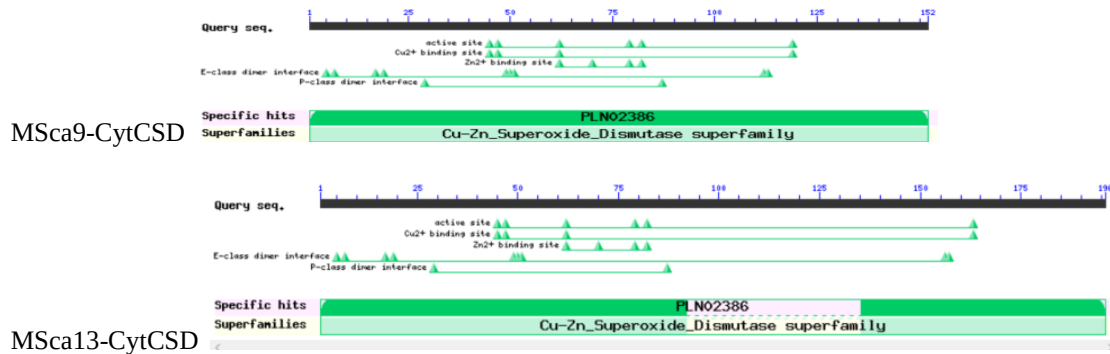
Chr4-CytCSD

Superfamilies **Cu-Zn_Superoxide_Dismutase superfamily**

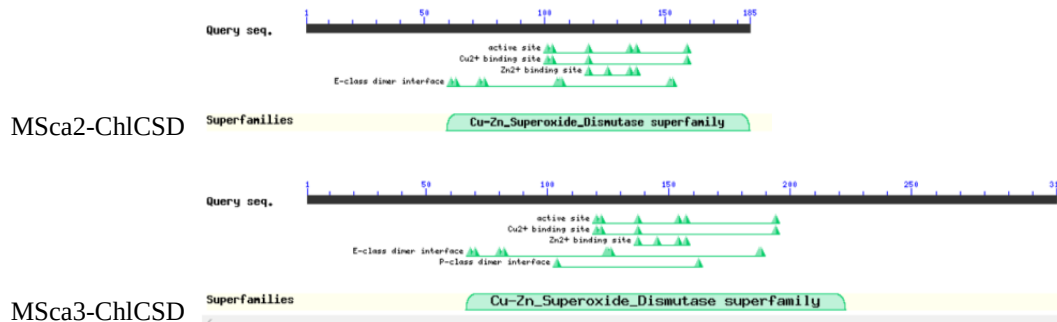


R) *Nelumbo nucifera*:

- i) Domain analysis of two cytosolic CSDs (CytCSDs) originated due to a block duplication event between chromosome MSca9 and MSca13.

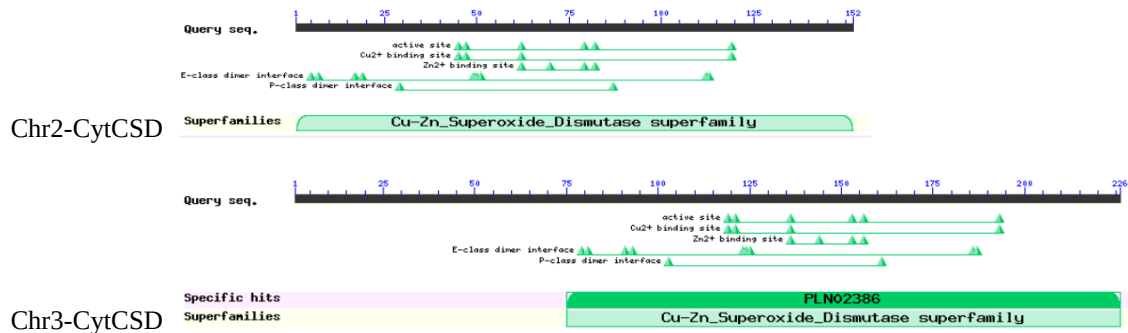


- ii) *Nelumbo nucifera*: Domain analysis of two chloroplastic CSDs (ChlCSDs) originated due to a block duplication event between chromosome MSca2 and MSca3.

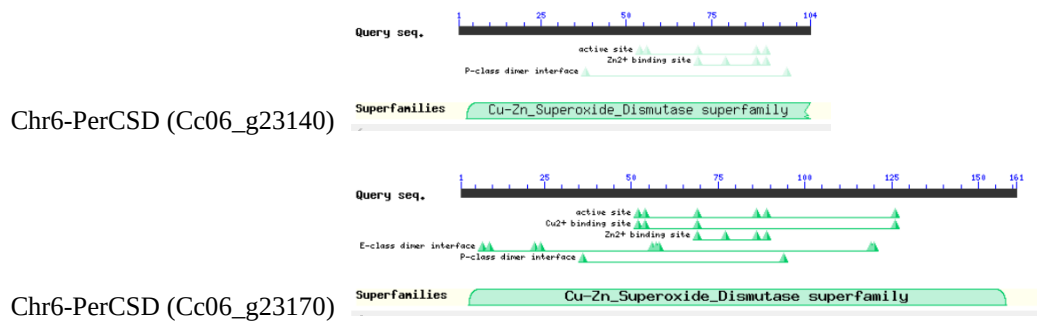


S) *Coffea canephora*:

- i) Domain analysis of two cytosolic CSDs (CytCSDs) originated due to a block duplication between Chromosome Chr2 and Chr3.

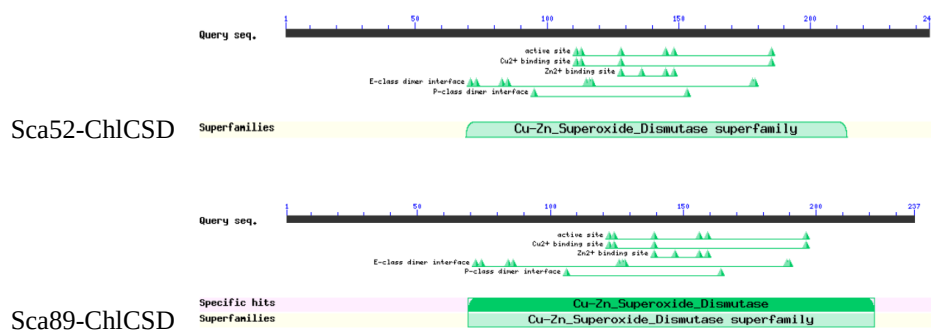


- ii) *Coffea canephora*: Domain analysis of two peroxisomal CSDs (PerCSD) originated due to a tandem duplication event (gene ids: Cc06_g23140 and Cc06_g23170) within chromosome Chr6.

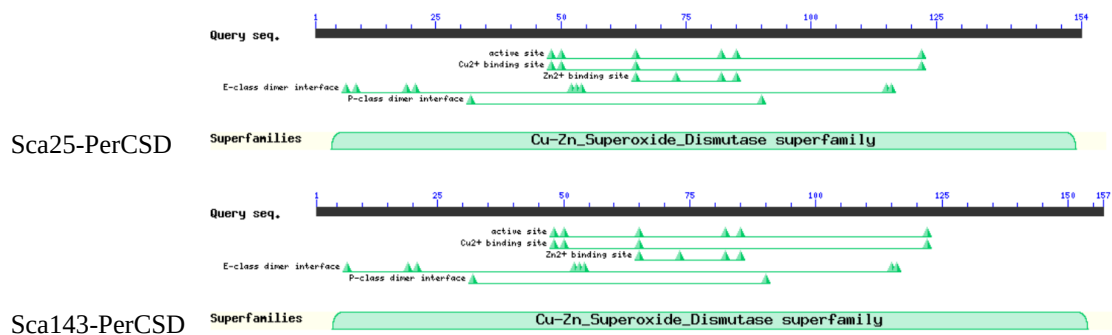


T) *Pyrus bretschneideri*:

- i) Domain analysis of two chloroplastic CSDs (ChlCSD) originated due to a block duplication between chromosome Sca52 and Sca89

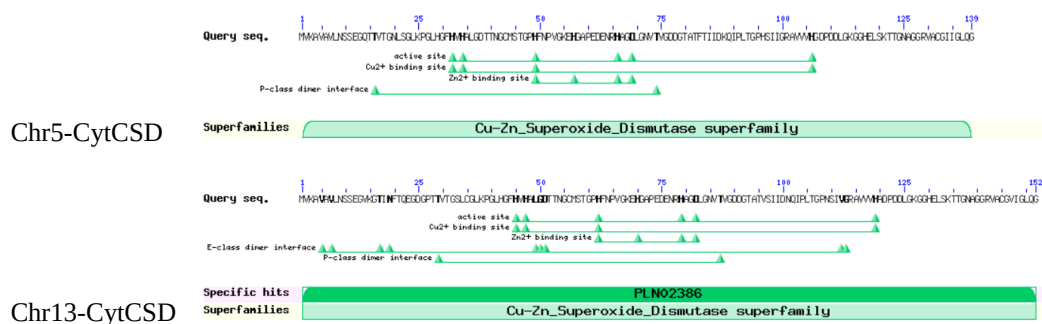


- ii) *Pyrus bretschneideri*: Domain analysis of two peroxisomal CSDs (PerCSD) originated due to a block duplication between chromosome Sca25 and Sca143

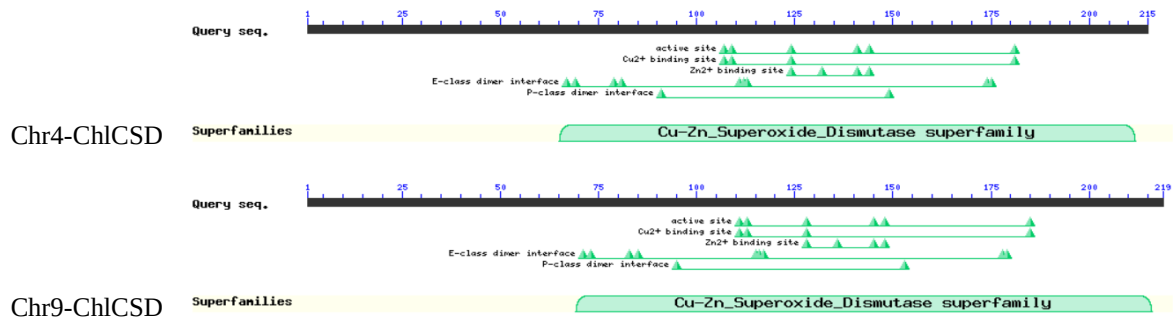


U) *Populus trichocarpa*:

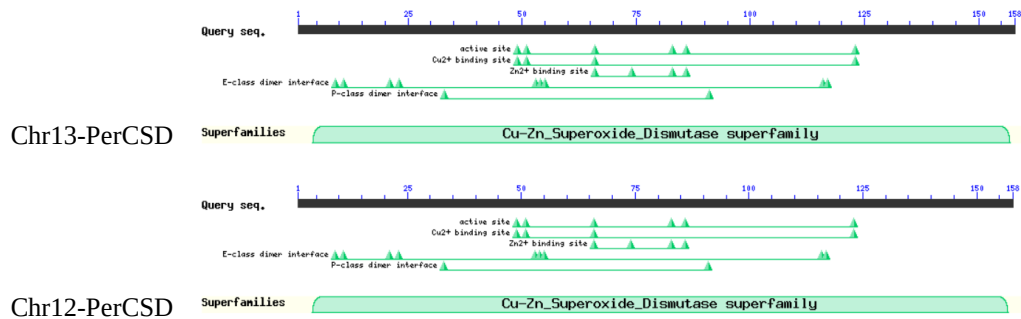
- i) Domain analysis of two cytosolic CSDs (CytCSD) originated due to a block duplication event between chromosome Chr5 and Chr13



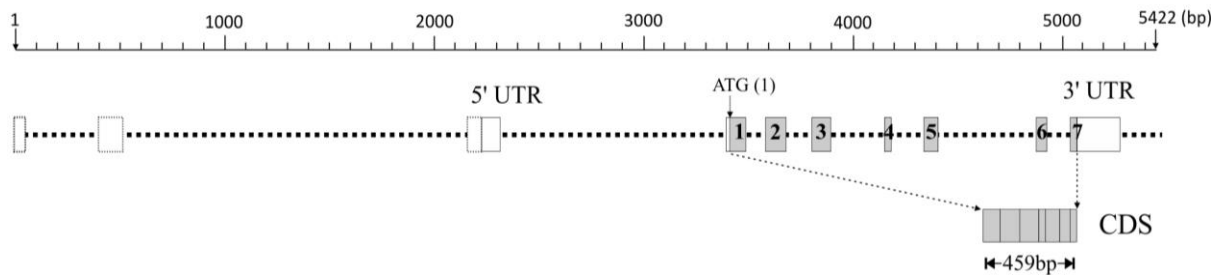
- ii) *Populous trichocarpa*: Domain analysis of two chloroplastic CSDs (ChlCSD) originated due to a block duplication event between chromosome Chr4 and Chr9



- iii) *Populous trichocarpa*: Domain analysis of two peroxisomal CSDs (PerCSD) originated due to a block duplication event between chromosome Chr13 and Chr19



Supplementary Figure 10: Schematic representation of organization of *OsCSD1* gene structure (locus designation: Os03g351300) as per Rice Annotation Project Database (<https://rapdb.dna.affrc.go.jp>). Scale on the top shows the relative location of exons (grey boxes), introns (dotted line), UTRs (white boxes) across the length of the gene (w.r.t. RGAP predicted *OsCSD1* gene). The position of the 'ATG' (in the is shown by a vertical arrow and the exons corresponding to the length of the coding sequence (CDS, 459 bp) is also shown below the gene. For comparison, RGAP predicted exon1, 2 and 3 (not predicted in RAP-DB) are also shown by white boxes with dotted boundary line.



Locus Os03g351500 (*OsCSD1*)