The failure to express a protein disulphide isomerase like protein results in a floury endosperm and an endoplasmic reticulum stress response in rice

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Supplementary Material

Table S1. Primer sequences used.

Primer name	Gene	Forward Sequence (5'→3')	Reverse Sequence (5'→3')	Purpose
RM167		GATCCAGCGTGAGGAACACGT	AGTCCGACCACAAGGTGCGTTGTC	Mapping
B11-15		CCATGGCGTAGCATATCAAA	GCTGATTGCCTCGAGTAAAG	Mapping
T3612-4-1		CGTTCGCACACTCACTCATA	TCGTTCTTTCCAAGATTAGA	Mapping
T3612-31		GTCAAATGGACAAACTTCTT	CCTCTATAAAGTGCCCTGTA	Mapping
T3612-41		TTTGGTCCCAGATTGGTAGA	GGCGAACCAATAACAATAGC	Mapping
T3612-45		CAATGAAGGCTATCTGTGTG	ATAGATCGCTTATCTTGGCA	Mapping
T3612-54		AATTCCCCCTATATAACAAT	AAGTTTAGAGGAGTATTTGG	Mapping
T3612-55		CTCCCGATTCTGACCCGCTC	CGCCGAGTTCGATGGAGATC	Mapping
PDI-2F	Os11g0199200	AAAGCCACCCACACTCTCCG		cDNA Clone
PDI-2R	Os11g0199200		TGTTAGCCGTCAGGTCCCGT	cDNA Clone
DEL-1F		TTGTGGAGACCGTGGCTTTG		Clone
DEL-1R			GCTCAGGAACGCTTCGCTGT	Clone
DEL-2F		TTTCCTGGCTTCGCATCACG		Clone
Actin1	Os03g0718100	TGGAACTGGTATGGTCAAGGC	AGTCTCATGGATACCCGCAG	RT-PCR
PDIL1-1	Os11g0199200	AAGTCACCAGAAGACGCAAC	TCAATGTCACCAATGAGGAA	RT-PCR
Ubiquitin	Os03g0234200	GCTCCGTGGCGGTATCAT	CGGCAGTTGACAGCCCTAG	Real-Time RT-PCR
bZIP17	Os07g0644100	TGGTTATTAAGTCCATTGTTGCGAGTG	AGTCTCCTCCTTTCCTTGGTTTCC	Real-Time RT-PCR
bZIP28	Os05g0411300	CCAAGGGAGGCTGGTAATG	AAAGGAAGCGTGCAGGAGTA	Real-Time RT-PCR
bZIP60	Os06g0622700	CGCCAGAGCTTGTTGAAGGATAGG	GCGGCAGGGTTTCCGTGAGTA	Real-Time RT-PCR
PDIL1-4	Os02g0100100	GCCATCGTGTCGTGGGTCA	GCCTCGAAGCAGCAGCAATC	Real-Time RT-PCR
PDIL2-1	Os05g0156300	CCCCACATTGAAATTCTTCCC	AATCACGGCTGGTTCCACA	Real-Time RT-PCR
PDIL2-2	Os01g0339900	TACGATGGCGGCAGGGAGT	TTGCGAGGGCATCCAAACT	Real-Time RT-PCR
PDIL2-3	Os09g0451500	TTTCCAGCTTGATGAAATAACTGAG	TCACCATCTTTGCCGTCCC	Real-Time RT-PCR

Table S1. ***(Continued)***

Primer name	Gene	Forward Sequence (5'→3')	Reverse Sequence (5'→3')	Purpose
PDIL5-1	Os03g0287900	TGGTTTGTGAAGTTCTGCGTTCC	CCACAGTCCACTTGCCCTATCTC	Real-Time RT-PCR
PDIL5-2	Os04g0432500	GCAATCCCTGCTTCCTTTG	GTTTCATCTGAATCATCCTCCAA	Real-Time RT-PCR
PDIL5-3	Os02g0550300	TAACCCAAAGTATCGTGAGCAGAG	GCACAACTAAAGGCAGAAGGGA	Real-Time RT-PCR
PDIL5-4	Os07g0524100	TTGTAATCTCAGCTCGATCTGGT	AACATCTTTGCCGATAGCCTTTT	Real-Time RT-PCR
Bip-1	Os02g0115900	CTTTGACGGGACCGATTTCT	CATGGTCTTGCGGAACAGAT	Real-Time RT-PCR
Bip-2	Os06g0212900	ACCCTGGTGCAGATGGACTCGC	CCGCCGACGACAAGAACCTC	Real-Time RT-PCR
HSP70-1	Os02g0710900	AAAGTACAGTAGCCGCAATTTATCT	TCAATCACTGCTTCTGCCCTAT	Real-Time RT-PCR
HSP90	Os06g0716700	GACTTCGCCTCCAGCATCTA	CGACCTCCTCTTCCTCTTCC	Real-Time RT-PCR
CNX	Os04g0402100	TGTTTGGTCCTGACAAATGTGGAT	AAGGTGGGAACTTGAGGTGGTGTT	Real-Time RT-PCR
CRT-1	Os07g0246200	ATGAGAACATGGCTGGTGAATG	TCTGGGTACTCCGCTGAAATAG	Real-Time RT-PCR
CRT-2	Os03g0832200	GAGGATGAGGCGGACGATGA	CCTTGATGTCCTGCGGTTTC	Real-Time RT-PCR
NEF	Os09g0512700	ATTAAAGATGCCGTCAGATGCT	GTCAATGGGCTCAACGAGAAT	Real-Time RT-PCR
ERDJ3-like	Os05g0156500	AACTGTTACAATCTCCCTGCTC	GGTGCCAATTTCCACCATA	Real-Time RT-PCR
Stt3a	Os04g0675500	CTCGGCGTTCGGCTACTTCT	GCACGTACAGCGGCAACAGAT	Real-Time RT-PCR
UDP glucose transporter	Os06g0593100	GGGTGTATCATCCTTTGCGTTGT	AATCTTGGGTCGAATTGGTGTAA	Real-Time RT-PCR
Derlin	Os03g0852200	TACAAGCAATGTTCCCGTGTATT	CTTCACCCTTCGTGTCCAGTT	Real-Time RT-PCR

Table S2. The 11 predicted genes present in the candidate region of chromosome 11 containing the floury endosperm mutation of *T3612*.

Number	Gene
1	putative Vhs Domain Of Tom1 Protein From H. Sapiens
2	putative pupative polyprotein
3	putative E3 ubiquitin-protein ligase CBL-B (Signal transduction protein CBL-B) (SH3-binding protein CBL-B) (Casitas B-lineage lymphoma proto-oncogene b)
4	putative Zinc finger CCHC domain-containing protein 10
5	putative gag-pol precursor
6	unknown protein similar to retrotransposon protein, unclassified
7	**putative Protein disulfide-isomerase precursor (PDI)**
8	putative E3 ubiquitin-protein ligase MIB2 (Mind bomb homolog 2) (RBSC-skeletrophin/dystrophin-like polypeptide)
9	putative ankyrin repeat family protein
10	unknown protein similar to retrotransposon protein, unclassified
11	putative Reverse transcriptase (RNA-dependent DNA polymerase) domain containing protein

Figure legends

Figure S1. The part of sequence of deletion boundary in *T3612*.

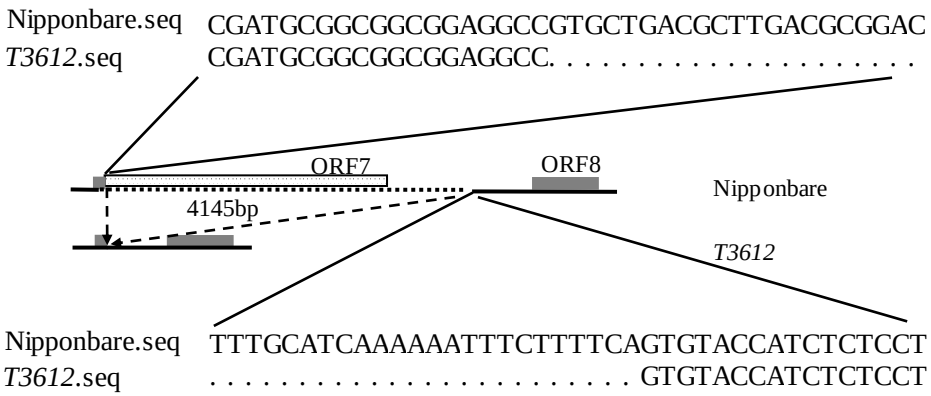
Figure S2. Genomic PCR from four independent T_1 complemented lines (A582-6, -9, -10 and -11). Lane 1: cv. Nipponbare; lane 2: *T3612*.

Figure S3. Expression levels of various genes involved in starch synthesis. Each value reported is the mean ± standard deviation of three biological replicates.

Figure S4. SDS-PAGE analysis of total mature grain protein.

Figure S5. TEM images of the developing endosperm of (A) cv. Nipponbare, (B) *T3612*.

Figure S6. Expression levels of various genes involved in grain storage protein synthesis. Each value reported is the mean ± standard deviation of three biological replicates.



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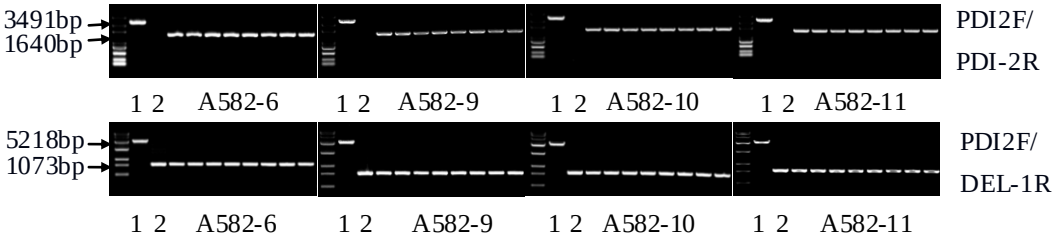

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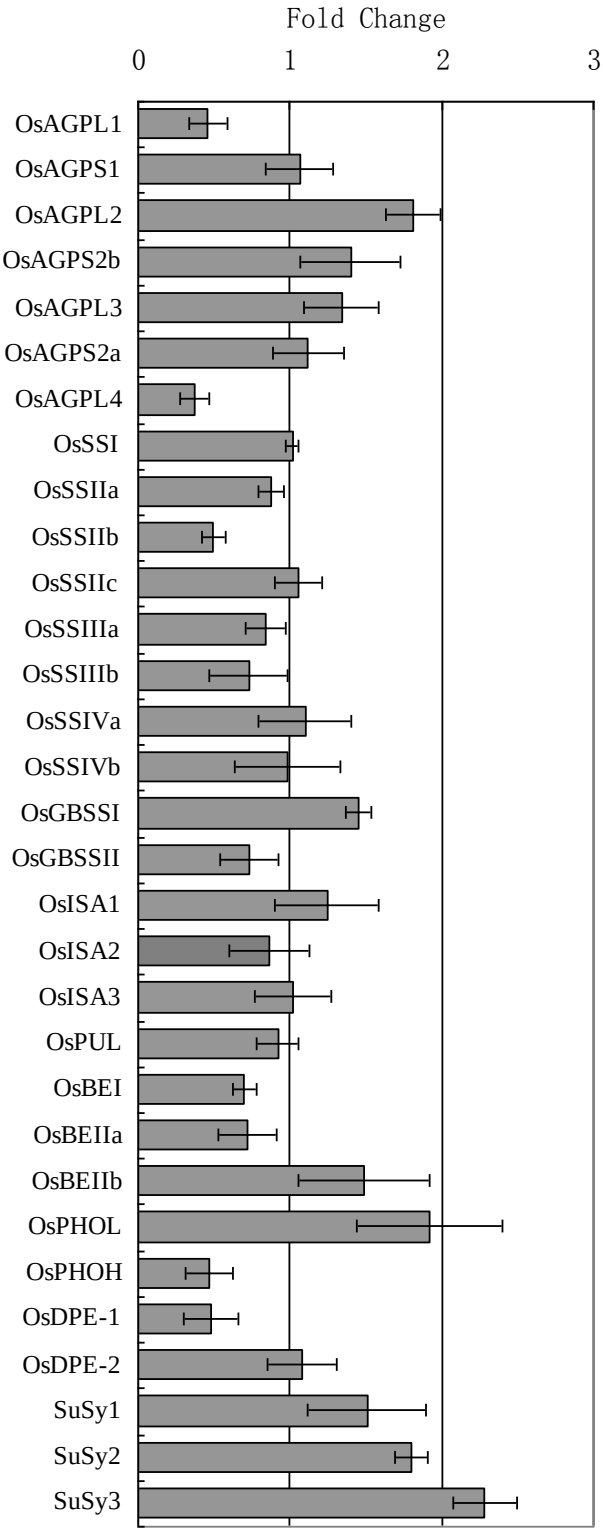

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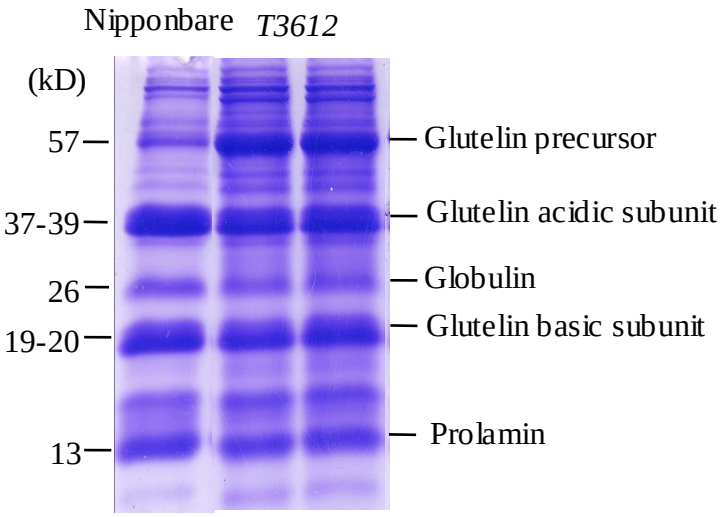

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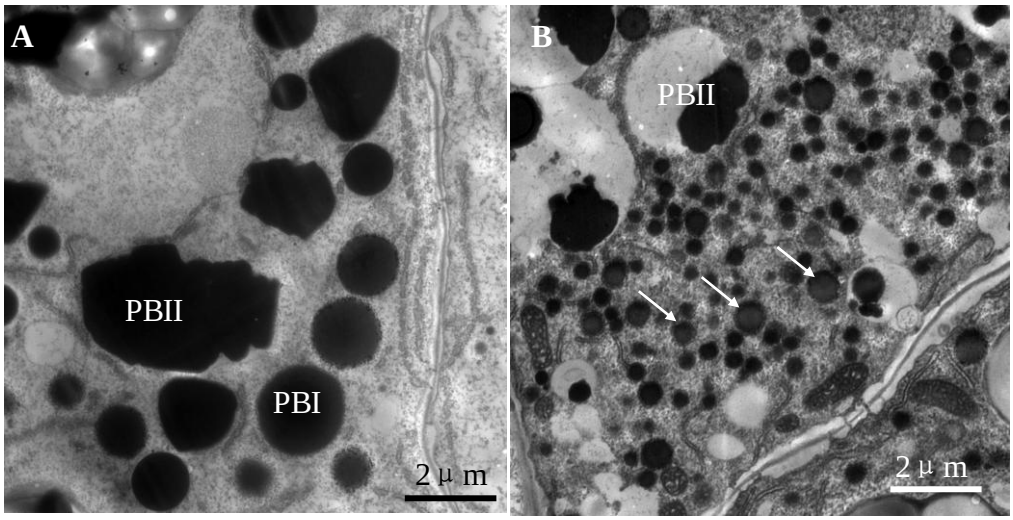

Figure S5. TEM images of the developing endosperm of (A) cv. Nipponbare, (B) *T3612*.

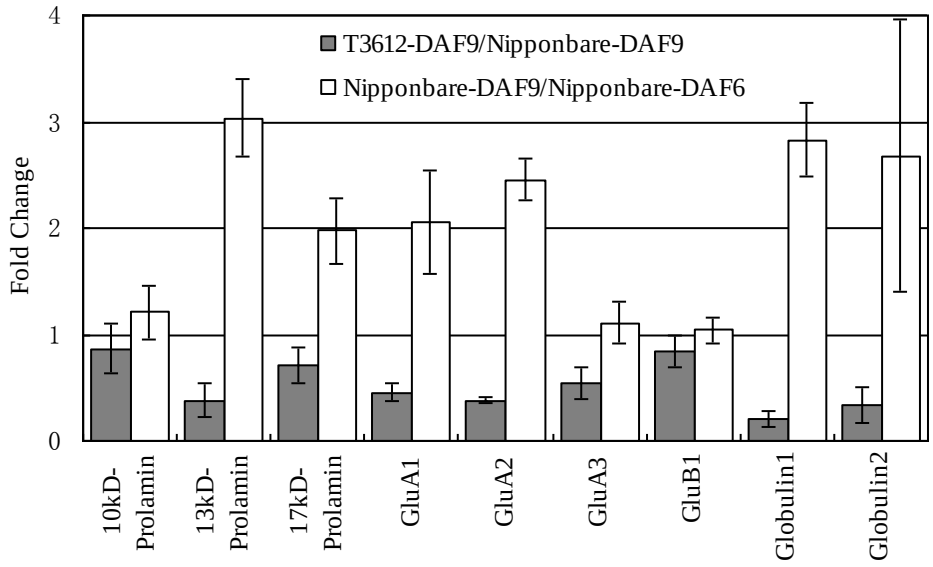

Figure S6. Expression levels of various genes involved in grain storage protein synthesis. Each value reported is the mean ± standard deviation of three biological replicates.