

**Supplementary Table S1. List of the primers used in the study**

Primer	Sequence	Experiment
Pi5-1 F1	ACAAATCACAACCGGATTGCTTTC	Pii-1 cloning
Pi5-1 R1	ATGTAAAGGCAAAAGCTGAT	Pii-1 cloning
Pi5-1 F2	TTATGAGATTAGGAGTGTAT	Pii-1 cloning
Pi5-1 R2	TCAGAAGCACTGGATCTTTCTGCA	Pii-1 cloning
Pi5-1 F3	GACATGATTGAGTCCAAACATGGA	Pii-1 cloning
Pi5-1 R3	ACTGGGAACCTTCTGGTACTTAGAG	Pii-1 cloning
Pi5-1 F4	TTGCCATCA TGCTTTGACAAG	Pii-1 cloning
Pi5-1 R4	CATACCTGCCGCCTCTTCAT	Pii-1 cloning
Pi5-1 F5	CAAGTGCAACTA GAGGTATGGT	Pii-1 cloning
Pi5-1 R5	AGGTTTCATTACATCACGTTTCATG	Pii-1 cloning
Pi5-2 F1	CTGCCTTGCATCTTCTCCAT	Pii-2 cloning
Pi5-2 R1	CAACTTGTATGGTGGAACTG	Pii-2 cloning
Pi5-2 F2	AGTTGAAGGAAATGTTGAGG	Pii-2 cloning
Pi5-2 R2	AGTGCTGATTGTCCAATATCATTG	Pii-2 cloning
Pi5-2 F3	GTGATGATCTCATAATTCTGGATG	Pii-2 cloning
Pi5-2 R3	GTGTTACATGTTTGGAGTTCACT	Pii-2 cloning
Pi5-2 F4	CTCTGGTGATCTTTGTTAC	Pii-2 cloning
Pi5-2 R4	TCTCCCTCGTTTTCTGTGA	Pii-2 cloning
Pi5-2 F5	GCTAATGAGTCGTTTTGTTTT	Pii-2 cloning
Pi5-2 R5	AGGCAGAAACCGCAACAGGTATGA	Pii-2 cloning
Pi5-2 F6	CTGGTTTTGCATTTCTTACCT	Pii-2 cloning
Pi5-2 R6	ACGGAAACCAAGGAATTGAGT	Pii-2 cloning
Pi5-2 F7	CATGATCAATGGCAATACCCTTCT	Pii-2 cloning
Pi5-2 R7	TGCTCAATTATTGAGGAGAGTGAG	Pii-2 cloning
Pi5-1 RNAi	CATTACCTATCAGATTTTTGGAA	Pi5-1 RNAi

Pi5-1 RNAi	GAGCTCCTAGGTCTGGTACTTAGAGAAAAGGATTG	Pi5-1 RNAi
Pi5-2 RNAi	ACTAGTGGCGCGCCTTGAACAACACTACCAGAATCTCTT	Pi5-2 RNAi
Pi5-2 RNAi	GAGCTCCTAGGACATATGTAGAAACATCAGTGCT	Pi5-2 RNAi
Pi5-1 qPCR-F	GACATGATTGAGTCCAAACATGGA	Quantitative PCR
Pi5-1 qPCR-R	TCAGAAGCACTGGATCTTTCTGCA	Quantitative PCR
Pi5-2 qPCR-F	GGAGGAACATACTTGATGCCAGCA	Quantitative PCR
Pi5-2 qPCR-R	GGCACGACCATCAGTTCATCTTCA	Quantitative PCR
Exo70F3-gnt-F	CTCCTCTCTCCGCCATTTTTCTACTG	Exo70F3 Cas9 genotyping
Exo70F3-gnt-R	GCTGCACTTCATCGATGCTG	Exo70F3 Cas9 genotyping

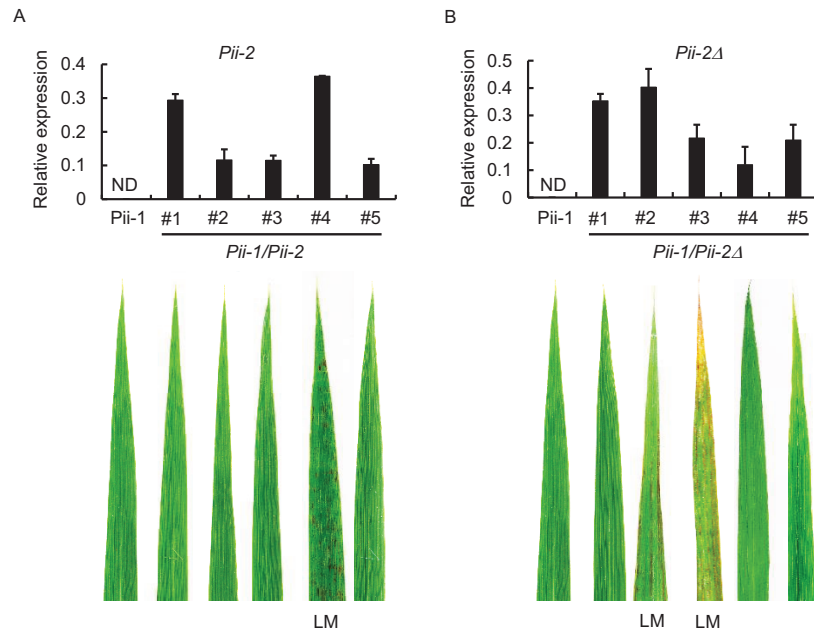
Penultimate exon

Pii-2	TGACTTTCGGTATGAGAAGGCTTCGCTAAACTACCGAAGAGAAGATGTCTGGTCAAAGGCAGAAACCGCAACAGgtatgacaaaactgccaccaaacgagaacgtaaataggcatgctc	6052
Pi5-2	TGACTTTCGGTATGAGAAGGCTTCGCTAAACTACCGAAGAGAAGATGTCTGGTCAAAGGCAGAAACCGCAACAGGTA <b>TGA</b> acaaaactgccaccaaacgagaacgtaaataggcatgctc	6058
Pii-2	tgctgtttgcccagaat <del>taaa</del> tttcat <b>gc</b> actgctattgaacatataatacttagtgcataacccaatttggacataaaaggtctcaactatcaataaaaaaatcatgcaggctaac	6172
Pi5-2	tgctgtttgcccagaat <del>taaa</del> tttcat <b>tg</b> actgctattgaacatataatacttagtgcataacccaatttggacataaaaggtctcaactatcaataaaaaaatcatgcaggctaac	6178
Pii-2	aataccacaaaaaa <b>aa</b> aaggagaaaaaatgaaaaaaaattggtaacccaaattatagaggctgacattatcagttctcaccacatcagtgatcttgaagacacacaaaccagtgccggagc	6292
Pi5-2	aataccacaaaaaa <b>--</b> aaggagaaaaaatgaaaaaaaattggtaacccaaattatagaggctgacattatcagttctcaccacatcagtgatcttgaagacacacaaaccagtgccggagc	6296
Pii-2	ttcatggagatcaaaagtgggttctggcccccctccaactccatgcaaaattat <b>tt</b> tatatgtatgtttatgttcataaaactattcattagccatcttccagtgattgacataaaaactc	6412
Pi5-2	ttcatggagatcaaaagtgggttctggcccccctccaactccatgcaaaattat <b>ac</b> tatatgtatgtttatgttcataaaactattcattagccatcttccagtgattgacataaaaactc	6416
Pii-2	atgttaatggccccctcttaaatagtttggtaagctgcgcatataaaatcatcttgacaaaatttttggtaacactgggaagtgcataatcaataactgaacgttctgaacaaatcaacct	6532
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Pii-2	ttatagacaatgcaagagcaaaaaaagaatttagtataccacaataatatttggtaacactctgagattctaggttgcctattgtgaactctgttggtaaccaatcagtgaaatttag	6652
Pi5-2	ttatagacaatgcaagagcaaaaaaagaatttagtataccacaataatatttggtaacactctgagattctaggttgcctattgtgaactctgttggtaaccaatcagtgaaatttag	6656
Pii-2	tcgctcctaaacatcaaaataaattataaaattataaaaaataaattatgaactggggaagtatatgttcaactctgcaacgttatataattgttatactataaaatcaccatgatcaa	6772
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Pii-2	tggcaataccctctctctctccagataaacttggtaactttaaataatgtttatcttggccttttttgcacaatactccctcctgccc <b>aa--</b> aaaaaaaaactcaattccttgggttc	6890
Pi5-2	tggcaataccctctctctctccagataaacttggtaactttaaataatgtttatcttggccttttttgcacaatactccctcctgccc <b>ccca</b> aaaaaaaaactcaattccttgggttc	6896
Pii-2	cgtatcctaacgtttgaccgtccgtcttatttgaaaaaattatgaaaaaataaaagataagtcacataaaatattatcattgttttcatctaacataataaaaaaac <b>taaatcg</b>	7010
Pi5-2	cgtatcctaacgtttgaccgtccgtcttatttgaaaaaattatgaaaaaataaaagataagtcacataaaatattatcattgttttcatctaacataataaaaaaac <b>aattta</b>	7016
Pii-2	taaaaaaattt <b>ca</b> tataagacggatggtcaaaatgttagacgcagaaatccaagaa <b>g-----</b> ttgtactgtttgaccact	7084
Pi5-2	taaaaaaattt <b>ta</b> tataagacggatggtcaaaatgttagacgcagaaatccaagaa <b>ttgagctctttttgggatggataatacaaggattttgacttttttag</b> ttgtaattgtttgaccact	7136
Pii-2	cgtcttattcaaaaaatttggcaaatataaaaaacgaaaaattgtgcttaagattttggataataaagtaagccacaaataaaataaataatagttctaattttttt <b>agtaaga</b> -cg	7203
Pi5-2	cgtcttattcaaaaaatttggcaaatataaaaaacgaaaaattgtgcttaagattttggataataaagtaagccacaaataaaataaataatagttctaattttttt <b>taataaga</b> cg	7256
Pii-2	aatgat <b>taaa</b> cagtgcaaa <b>ca</b> aaaaagtcataatccctacattattttttt <b>ttgaga</b> caaaa <b>-----</b> atccctacatcgg	7266
Pi5-2	aatgat <b>taaa</b> cagtgcaaa <b>ca</b> aaaaagtcataatccctacattattttttt <b>ttgaga</b> caaaa <b>tcctacattatagtagcggaggagtagtagatatacagagatctatccatctag</b>	7375
Pii-2	<b>-----</b> atccctacatcgg	7279
Pi5-2	<b>acttttagagtcgtgcgtacgaacatcccttttcccgatggtaacgaattcgaatcgttagtccagtagctactctactctctctctttatcttccoggtttccggggctccct</b> ttccagtagcgg	7495
Pii-2	gca <b>---</b> ct <b>acag</b> ggtggtggtcagttactcactcgtcagatcagggcgtctctatttgcctcgtcagataaaaa <b>aa</b> aaaattatattttcttgggtggtgtttctgatcaggtgacac	7396
Pi5-2	gca <b>ctctacagggt</b> ggtggtggtcagttactcactcgtcagatcagggcgtctctatttgcctcgtcagataaaaa <b>aa</b> aaaattatattttcttgggtggtgtttctgatcaggtgacac	7614
Pii-2	tgcgatgtctctcttgcag <b>AGAAAACACGGAATGAGCGATTGGCGCGGTGGCATGCCGAACCTCGCAAAAAAGA</b> <b>TCC</b>	7478
Pi5-2	tgcgatgtctctcttgcag <b>AGAAAACACGGAATGAGCGATTGGCGCGGTGGCATGCCGAACCTCGCAAAAAAGATGA</b>	7696

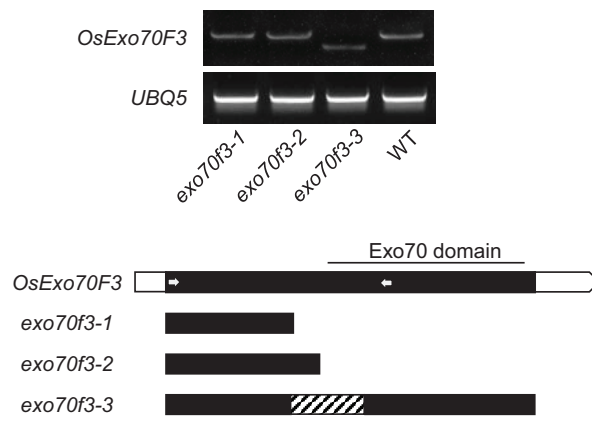
Supplementary Fig. S1. DNA alignment of the C-terminal regions of Pii-2 and Pi5-2. Exons are presented in grey shade whereas yellow and green highlight stop codons in Pi5-2 and Pii-2, respectively. Different nucleotides between the two genes are shown in blue.



**Supplementary Fig. S2.** LM phenotype in a *Pi5-1/Pi5-2*-expressing plant at five weeks of age.



**Supplementary Fig. S3.** LM phenotype in *Pii-1/Pii-2* (A) and *Pii-1/Pii-2Δ* (B) transgenic plants. Expression of *Pii-2* and *Pii-2Δ* was evaluated by quantitative RT-PCR analysis. The rice gene Ubiquitin5 (*OsUbi5*; LOC\_Os01g22490) was used to normalize gene expression. ND, not detected.



**Supplementary Fig. S4.** RT-PCR analysis of the *OsExo70f3* mutants (upper panel) and schematic diagram of truncated Exo70F3 proteins with premature stop codons in the mutants (lower panel). White arrows indicate the position of RT-PCR primers. Striped box represents a deleted part in *exo70f3-3*.