

Supplementary Table S1. Primers used in this study.

Name	Sequence	Purpose
ko- <i>OsRRM2</i> F	gccGAGAAGAGCGTGGCCGCCAT	Adaptor for Cas9 system
ko- <i>OsRRM2</i> R	aaacATGGCGGCCACGCTCTTCTC	Adaptor for Cas9 system
gfp- <i>OsRRM2</i> F	ggagaggacagcccagatcaactagtATGGCGGCCACGC	HR-PCR for pAN580
gfp- <i>OsRRM2</i> R	tcctcgcccttgctcaccatggatccATATTGTCTCCTAGGTGGT TTCG	HR-PCR for pAN580
gfp- <i>Pik1-H4</i> F	ggagaggacagcccagatcaactagtATGGAGGCGGCTGC	HR-PCR for pAN580
gfp- <i>Pik1-H4</i> R	tcctcgcccttgctcaccatggatccGCTAGTAGTTTCTGTTTGA ATTTCAATATC	HR-PCR for pAN580
gfp- <i>Pik2-H4</i> F	ggagaggacagcccagatcaactagtATGGAGTTGGTGGTAGG TG	HR-PCR for pAN580
gfp- <i>Pik2-H4</i> R	tcctcgcccttgctcaccatggatccTGCAGTGACGATGCCATC	HR-PCR for pAN580
his- <i>Pik1-H4</i> F	GTGGACAGCAAATGGGTCGCGGATCCATGGAGGC GGCTGC	HR-PCR for pET28a
his- <i>Pik1-H4</i> R	CAGTGGTGGTGGTGGTGGTGGTCTCGAGGCTAGTAGT TTCTGTTTGAATTTCAAT	HR-PCR for pET28a
his- <i>Pik2-H4</i> F	GTGGACAGCAAATGGGTCGCGGATCCATGGAGTT GGTGGTAGGTGC	HR-PCR for pET28a
his- <i>Pik2-H4</i> R	CAGTGGTGGTGGTGGTGGTGGTCTCGAGTGCAGTGA CGATGCCATCA	HR-PCR for pET28a
ad- <i>OsRRM2</i> F	GTACCAGATTACGCTCATATGATGGCGGCCACGCT CTT	HR-PCR for pGADT7
ad- <i>OsRRM2</i> R	CAGCTCGAGCTCGATGGATCCTCAATATTGTCTCC TAGGTG	HR-PCR for pGADT7
ad- <i>Pik1-H4</i> -CC F	acgacgtaccagattacgctcatatgATGGAGGCGGCTGCCATG	HR-PCR for pGADT7
ad- <i>Pik1-H4</i> -CC R	tatcgatgccacccgggtggaattcTGTTTTTCTGAGCGGGAA ATGCGG	HR-PCR for pGADT7
ad- <i>Pik1-H4</i> -HMA F	acgacgtaccagattacgctcatatgGGGCTAAAGCAAAAAAT CGTGATCAAGG	HR-PCR for pGADT7
ad- <i>Pik1-H4</i> -HMA R	tatcgatgccacccgggtggaattcCACATCTTTTTTTGCTTGG CTGACCT	HR-PCR for pGADT7
ad- <i>Pik2-H4</i> -NBS F	taccagattacgctcatatgAAGACGGTCATGGAGGAGCTTG AGGT	HR-PCR for pGADT7
ad- <i>Pik2-H4</i> -NBS R	tgccacccgggtggaattcCAGGCCTTTTGTGAACTTCCA CGAT	HR-PCR for pGADT7
ad- <i>Pik2-H4</i> -LRR F	taccagattacgctcatatgAACTTGGCTCAAGTGAGATCAC TGAC	HR-PCR for pGADT7

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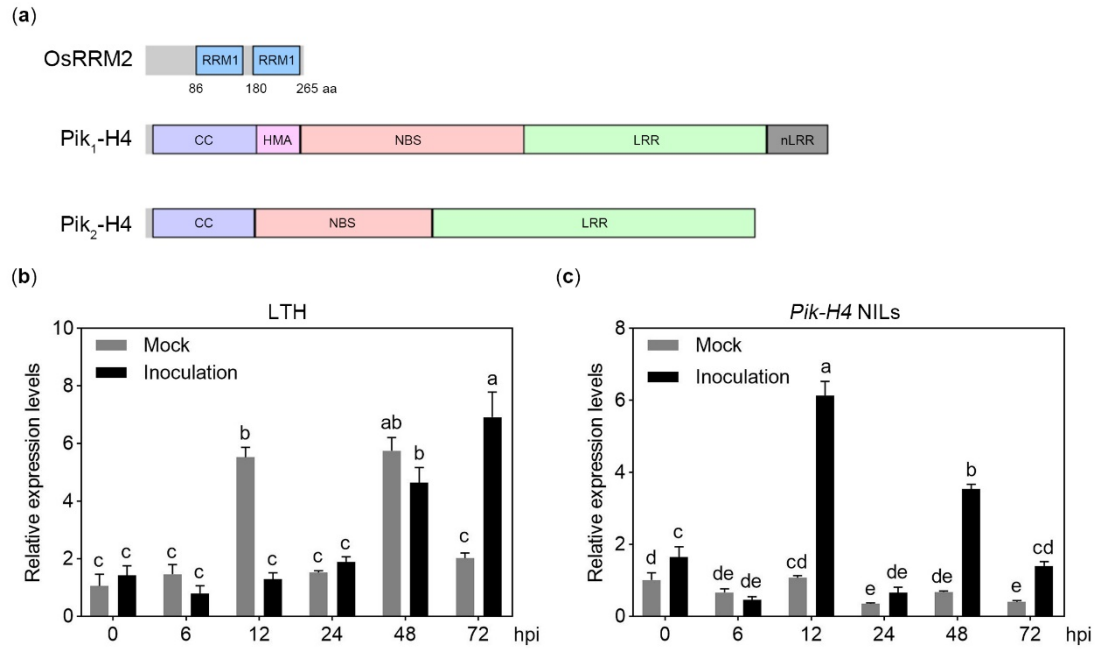
ad- <i>Pik2-H4</i> - LRR R	tgccacccgggtggaattcTCATGCAGTGACGATGCCATCA ACAA	HR-PCR for pGADT7
ad- <i>OsRRM2</i> - 1 F	taccagattacgctcatatgATGGCGGCCACGC	HR-PCR for pGADT7
ad- <i>OsRRM2</i> - 1 R	agctcgagctcgatggatcctcaCCTCAGGTCGTCGGAG	HR-PCR for pGADT7
ad- <i>OsRRM2</i> - 2 F	taccagattacgctcatatgGTCTTCGTCGGCAACCT	HR-PCR for pGADT7
ad- <i>OsRRM2</i> - 2 R	agctcgagctcgatggatcctcaCCTGTTGGCCTCACCC	HR-PCR for pGADT7
ad- <i>OsRRM2</i> - 3 F	taccagattacgctcatatgGTCTATGTAGGTAACCTTTCTTG GG	HR-PCR for pGADT7
ad- <i>OsRRM2</i> - 3 R	agctcgagctcgatggatccTCAATATTGTCTCCTAGGTGGTT	HR-PCR for pGADT7
bd- <i>OsRRM2</i> F	TCAGAGGAGGACCTGCATATGATGGCGGCCACGC TCTT	HR-PCR for pGBKT7
bd- <i>OsRRM2</i> R	CCGCTGCAGGTCGACGGATCCTCAATATTGTCTCC TAGGTG	HR-PCR for pGBKT7
bd- <i>OsBIHD1</i> F	TCAGAGGAGGACCTGCATATGATGGCTACTTACTA CTCGAG	HR-PCR for pGBKT7
bd- <i>OsBIHD1</i> R	CCGCTGCAGGTCGACGGATCCTTAGGCCACAAAA TCATGCAT	HR-PCR for pGBKT7
bd- <i>Pik2-H4</i> F	TCAGAGGAGGACCTGCATATGATGGAGTTGGTGGT AGGTGCTTCCGAAG	HR-PCR for pGBKT7
bd- <i>Pik2-H4</i> R	CCGCTGCAGGTCGACGGATCCTCATGCAGTGACG ATGCCATCAACAAAT	HR-PCR for pGBKT7
bd- <i>Pik1-H4</i> - CC F	tgatctcagaggaggacctgcatatgATGGAGGCGGCTGCCATG	HR-PCR for pGBKT7
bd- <i>Pik1-H4</i> - CC R	gcaggtcgacggatccccggaattcTGTTTTTCTGAGCGGGAA ATGCGG	HR-PCR for pGBKT7
bd- <i>Pik1-H4</i> - HMA F	tgatctcagaggaggacctgcatatgCACATCTTTTTTTGCTTGG CTGACCT	HR-PCR for pGBKT7
bd- <i>Pik1-H4</i> - HMA R	gcaggtcgacggatccccggaattcCACATCTTTTTTTGCTTGG CTGACCT	HR-PCR for pGBKT7
bd- <i>Pik2-H4</i> - LRR F	cagaggaggacctgcatatgAACTTGGCTCAAGTGAGATCA CTGAC	HR-PCR for pGBKT7
bd- <i>Pik2-H4</i> - LRR R	cgacggatccccggaattcTCATGCAGTGACGATGCCATCA ACAA	HR-PCR for pGBKT7
bd- <i>OsRRM2</i> - 1 F	cagaggaggacctgcatatgATGGCGGCCACGC	HR-PCR for pGBKT7
bd- <i>OsRRM2</i> - 1 R	cgctgcaggtcgacggatcctcaCCTCAGGTCGTCGGAG	HR-PCR for pGBKT7

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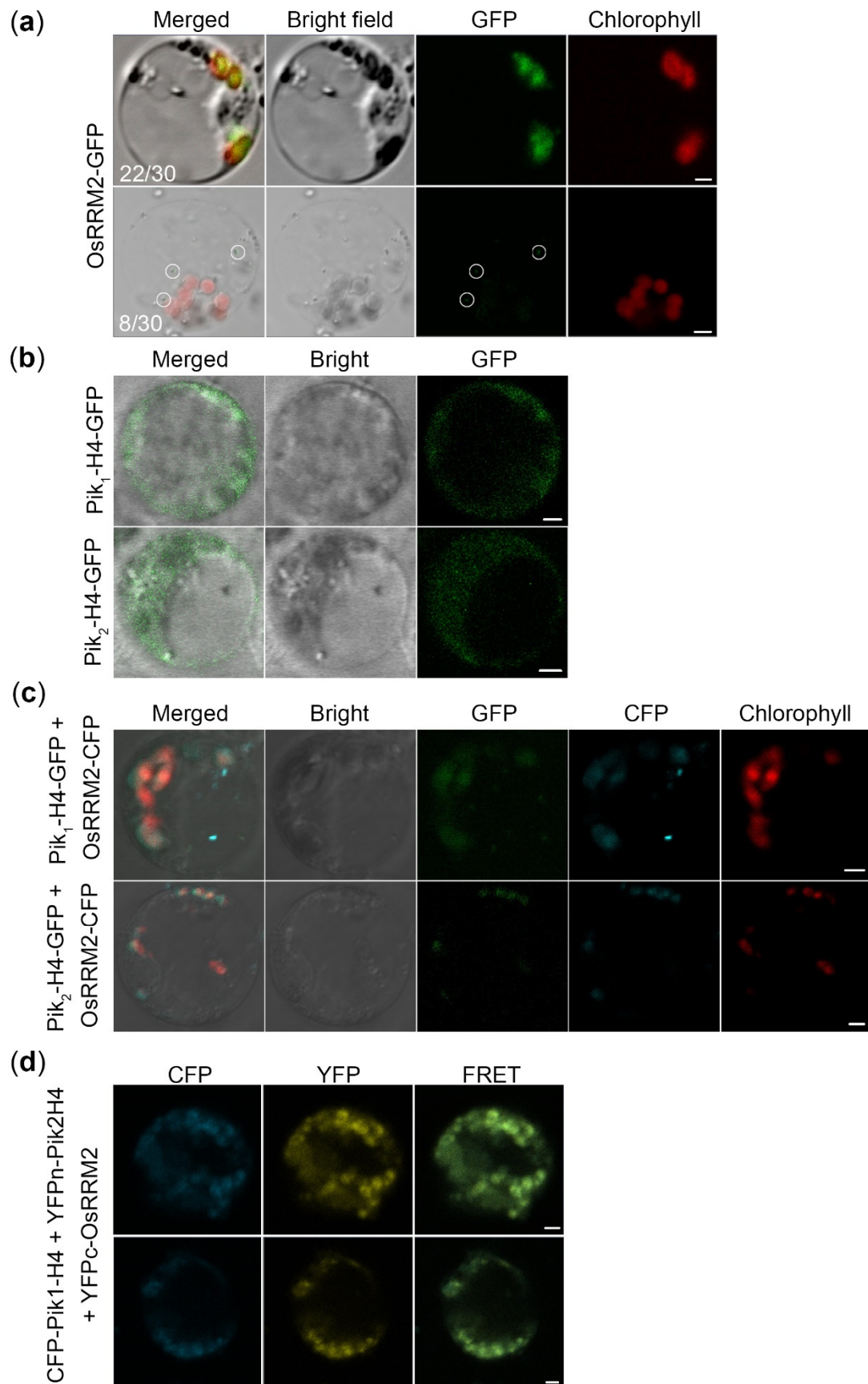
bd- <i>OsRRM2-2</i> F	cagaggaggacctgcatatgGTCTTCGTCGGCAACCT	HR-PCR for pGBKT7
bd- <i>OsRRM2-2</i> R	cgctgcaggtcgacggatcctcaCCTGTTGGCCTCACCC	HR-PCR for pGBKT7
bd- <i>OsRRM2-3</i> F	cagaggaggacctgcatatgGTCTATGTAGGTAACCTTTCT TGGG	HR-PCR for pGBKT7
bd- <i>OsRRM2-3</i> R	cgctgcaggtcgacggatccTCAATATTGTCTCCTAGGTGG TT	HR-PCR for pGBKT7
gst- <i>OsRRM2</i> F	CGCGTGGATCCCCGGAATTCATGGCGGCCACGC	HR-PCR for pGEX- 4T-1
gst- <i>OsRRM2</i> R	TCACGATGCGGCCGCTCGAGATATTGTCTCCTAG GTGGTTTCG	HR-PCR for pGEX- 4T-1
oe- <i>OsRRM2</i> F	GTTTGGTGTACTTCTGCAGATGGCGGCCACGC	HR-PCR for pOX- GFP
oe- <i>OsRRM2</i> R	CCCTTGCTCACCATACGCGTATATTGTCTCCTAG GTGGTTTCG	HR-PCR for pOX- GFP
cy- <i>Pik1-H4</i> F	ttggagagaacacgggggactctagaATGGAGGCGGCTGC	HR-PCR for pUC- CE1R2R-nsI
cy- <i>Pik1-H4</i> R	catcccgaggagcggtaccctcgagGCTAGTAGTTTCTGTTTG AATTTC AAT	HR-PCR for pUC- CE1R2R-nsI
cy- <i>Pik2-H4</i> F	ttggagagaacacgggggactctagaATGGAGTTGGTGGTAG GTG	HR-PCR for pUC- CE1R2R-nsI
cy- <i>Pik2-H4</i> R	catcccgaggagcggtaccctcgagTGCAGTGACGATGCCA	HR-PCR for pUC- CE1R2R-nsI
cy- <i>OsRRM2</i> F	ttggagagaacacgggggactctagaATGGCGGCCACGC	HR-PCR for pUC- CE1R2R-nsI
cy- <i>OsRRM2</i> R	catcccgaggagcggtaccctcgagATATTGTCTCCTAGGTGG TTTCG	HR-PCR for pUC- CE1R2R-nsI
cfp- <i>Pik1-H4</i> F	CTTCGAATTCTGCAGTCGACATGGAGGCGGCTGC	HR-PCR for pUC- CFP
cfp- <i>Pik1-H4</i> R	ACTCTAGATCAGGTGGATCCCTAGCTAGTAGTTT CTGTTTGAATTTC AATAT	HR-PCR for pUC- CFP
t-Ubi F	TCTTTT TAGTGTGCATGTGTTCTCC	PCR test
t- <i>OsRRM2</i> R	GCAACTAGACACAATCATT CATCACC	PCR test
q- <i>PR1a</i> F	CGGAGAAGCAGTGGTACGA	qRT-PCR

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q-PR1a R	TGATGAAGACGCCGAGGTC	qRT-PCR	
q-PR1b F	GAACAACCTTGGCGAGAA	qRT-PCR	
q-PR1b R	TTGGAGGCGTAGTCGTAG	qRT-PCR	
q-PR10 F	CTTCATCGACGCCATTGA	qRT-PCR	
q-PR10 R	GAACCTCTGACTTGATAATGTG	qRT-PCR	
q-OsRRM2 F	GAAGGGGAGGTCTTGGAAGC	qRT-PCR	
q-OsRRM2 R	ATCCATGTCAGCGCCATCAA	qRT-PCR	
q-RAC1 F	ATGTGCTCTTCTGGATGGCT	qRT-PCR	
q-RAC1 R	GAAAAGGTTGAAGCATGTGGCT	qRT-PCR	
q-GAP1 F	TGCTATTGGTCTCAGCATTGGA	qRT-PCR	
q-GAP1 R	TGTGTTGACCCGGGTTTGAT	qRT-PCR	
q-CPK12 F	TCGAATTCACAGGACGGGAGA	qRT-PCR	
q-CPK12 R	TTTTGCGTTTCATCTGCTTGC	qRT-PCR	
q-EIL1A F	GCGACGATACTCCATTCGGT	qRT-PCR	
q-EIL1A R	AGTACCAATTCGAGCCGTCA	qRT-PCR	
q-APX8 F	AACCACTGCTCAAGCGTGTA	qRT-PCR	
q-APX8 R	TCGTGCGAAATGGGTCTTCA	qRT-PCR	
q-DJA6 F	AGTGGTGGATGAGCATTCGT	qRT-PCR	
q-DJA6 R	ACAGAGACGCATCGAAGACC	qRT-PCR	
q-RBOHB F	GACCCATTTCGCACGACCTA	qRT-PCR	
q-RBOHB R	TGCAATGGATCATGGACATTCCT	qRT-PCR	
q-Actin F	GATTGCCAAGGCTGAGTACG	qRT-PCR	
q-Actin R	AAAAGAAGAAACAAGCAGGAT	qRT-PCR	
q-OsPBZ1 F	CGCCGCAAGTCATGTCCTAA	qRT-PCR	
q-OsPBZ1 R	CCACGATGTCCTTCTCCTTCTC	qRT-PCR	
SELEX F	cgTAATACGACTCACTATAGGGATTACGCCAAG CTT	SELEX PCR	
SELEX R	GGTACCCGGGGATCC	SELEX PCR	
SELEX- Oligo	ggGATTACGCCAAGCTT(N) ₄₀ GGATCCCCGGGTACC	SELEX primer	random

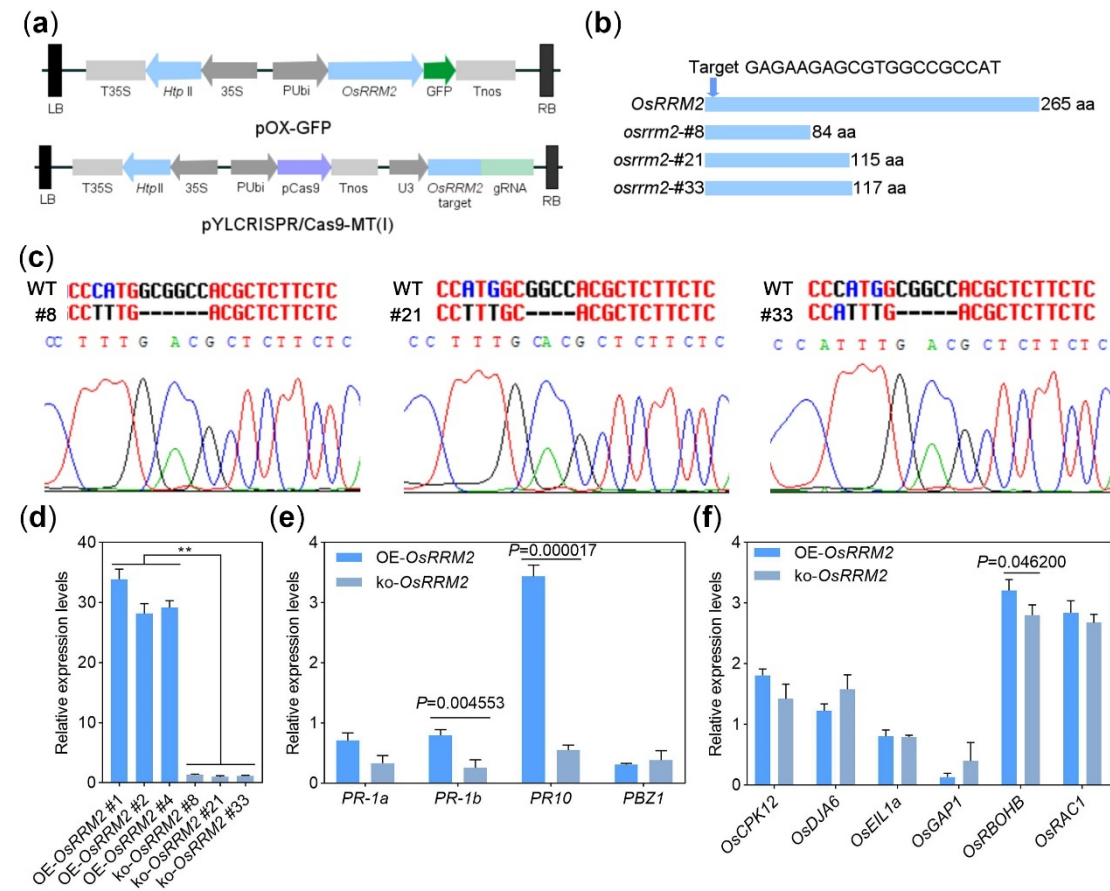


Supplementary Figure S1. OsRRM2 domain and expression pattern post-inoculation. (a) The protein plots of OsRRM2, Pik₁-H4 and Pik₂-H4. The OsRRM2 structure was analyzed by Pfam; (b) The expression pattern of *OsRRM2* upon rice blast inoculation in LTH; (c) The expression pattern of *OsRRM2* upon rice blast inoculation in *Pik-H4* NILs. The values are shown as mean \pm SD (n=3). β -actin was tested as an internal reference, the 0 hpi mock treatment groups were regarded as the control groups. The lowercase letters (a, b, c, etc.) indicate the data were at $P < 0.01$ level according to one-way ANOVA with Dunnett's test.

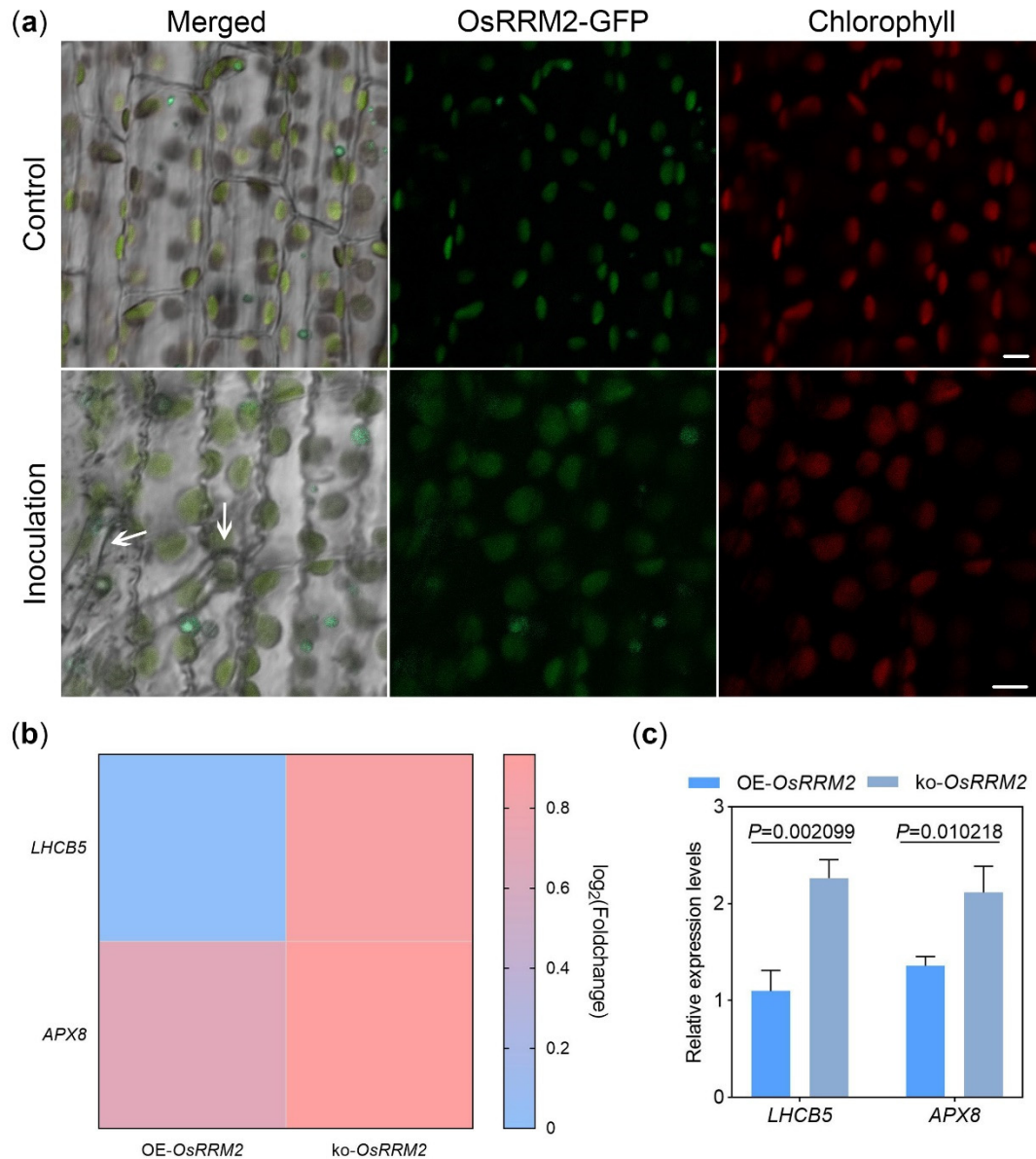


Supplementary Figure S2. Subcellular location of OsRRM2, Pik₁-H4 and Pik₂-H4. (a) Subcellular location of OsRRM2-GFP. The numbers represent the cells observed in this study.

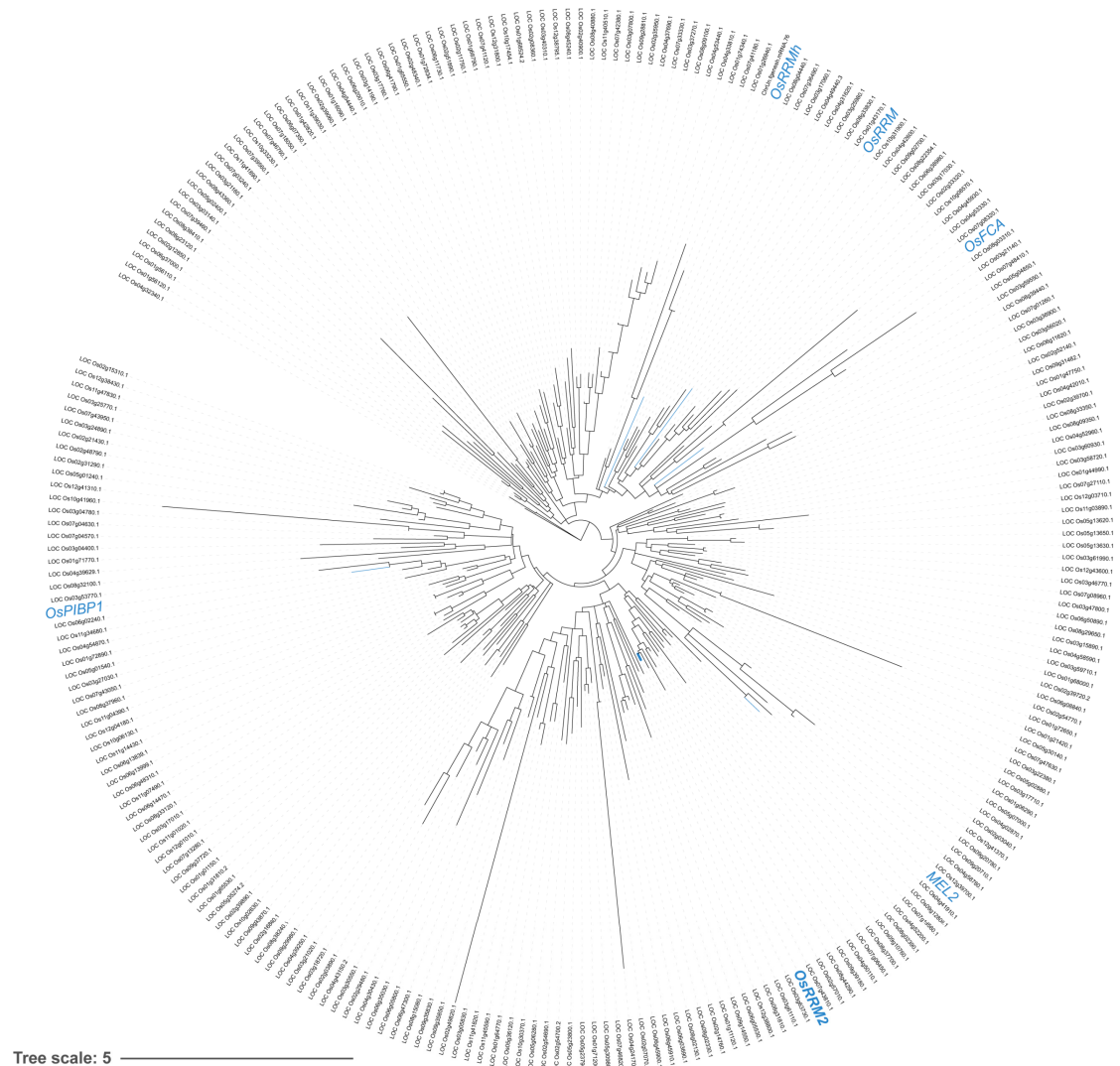
n=30; (b) Subcellular location of Pik₁-H4-GFP and Pik₂-H4-GFP; (c) Co-location of OsRRM2-CFP with Pik₁-H4-GFP or Pik₂-H4-GFP; (d) FRET assays of CFP-Pik₁-H4, YFPn-Pik₂-H4 and YFPc-OsRRM2. The FRET channels were excited by 405 nm only. Scale bars = 5 μ m.



Supplementary Figure S3. Construction of the transgenic *OsRRM2* plants. (a) Plots of overexpression and knockout of *OsRRM2* plasmids; (b) The *OsRRM2* CRISPR/Cas9 target and plots of *OsRRM2* mutants; (c) Alignments and chromatograms of *OsRRM2* mutants; (d) Relative expression levels of *OsRRM2* in transgenic plants. ** indicates the data were at $P < 0.01$ level according to the Students' t-test; (e) The relative expression levels of resistance-related genes in *OsRRM2* transgenic plants; (f) The relative expression levels of ROS-related genes in *OsRRM2* transgenic plants. The values are shown as mean \pm SD (n=3). β -actin was tested as an internal reference and the expression levels in *Pik-H4* NILs were regarded as the control groups.



Supplementary Figure S4. OsRRM2 location upon rice blast infection and effect on chloroplast immune genes. **(a)** In vivo subcellular location of OsRRM2-GFP. The arrows indicate the hyphae of rice blast fungus. Scale bars = 5 μ m; **(b)** Transcriptome analysis of chloroplast immune-related genes; **(c)** Relative expression levels of chloroplast immune-related genes. *β -actin* was tested as an internal reference and the expression levels in *Pik-H4* NILs were regarded as the control groups. The values are shown as mean \pm SD (n=3). The data were compared according to the Students' t-test.



Supplementary Figure S5. Phylogenetic analysis of rice RRM family proteins. The reported RRM proteins are shaded in blue.