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At-LYP1  ---METSCTLLGLLVSLSFFLLTSLAQ---MTGNFNCS--GSTSTCQSLVGYSSKNATTLRNIQTFLAVKNLRSILG-ANNLPLNTRDQRVNPQVVRVPIHCSCSNQTGVSNRDIE 109
At-LYP2  -----MKNPEKPLLLF---LILASSLASMATAKSTIEPCSSKDTICNSLLGYTLYDLKVEVASLFQVDPVSMLLSNSIDISYDPVENHVLPAKFLFKIPITCSCVDGIRKSL-TH 108
At-LYP3  -----MKIPEKPIFLIFVSLILASSLTFTATAKSTIEPCSSNDTCNALLGYTLYDLKVEVASLFQVDPVSMLLSNSIDISYDPVENHVLPAKFLFKIPITCSCVDGIRKSL-TH 111
Os-LYP1  MASLTAALATPAAAAILLLVLLAAPAS-----AANFTC--AVASGTTCKSAILYTSFNATTYGNLVARFNTTLPDLLG-ANGLPDGTLSSAPVAANSTVKIPFRRCRCNGDVGGSDRLPI 112
Os-LYP2  ---MVPFSFSSAAAAILLLVLLASSAS-----ATNFTC--TWP--TTCQSAIVYTPPAATTYIELLSSEFTTTLRDLFD-ANGLPPTPSTHTAIPTNATVIVPFRCSCVAGANRPESQPF 107
Os-LYP3  ---MTAAMAPPQLVSVLVALLCVAAASPAGVGAARFVFNATAPRASTCQALVAYAPPNATTLAAVRLALFQLRSHRALLA-SHGLPLSTPPSAPAPSPERVRLP--CLCSGGAGATFORPT 114
Os-LYP4  ---MPPPLLLLLL---LAAAAAIVAPARSKSTLESCSSSTACPALLSYTYADLKLAEALALFSAADPLAIIAANSIDFAVDPADRIPLAGLPLRVLPVPCACSDGIRRVTT-VR 107
Os-LYP5  ---MAGVCSVAAAAAMVV---VVMVSSLPGGVEAKTTIEPCTGSDSCSALLGYTLYADMVSEVAALFGTDPAAALLAANALDFGAPGAHRIILPMGLFVRVTRCSCDTGVRKSVS-VR 114
Os-LYP6  ---MAG--WPAEEAAGALV---VAILAAAAGGAAGKTTIEPCAGADTCAALLGYTLYADMVSEVAALFGADPRAVLAANALDFASPGAANRIILPAGLPLRVTRCASCSDGVRKSVVA-VR 111
    
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LysM

LysM

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At-LYP1  YTIKKDDILSFVATEIFGGLVTYEKISEVNI--KIPDENKIEIGQKFWIPLPCSCDKLNGE--DVVHYAHVVKLGSSELGEIAAQFGTDNTTLAQINGIIGDSQLLADKPLDVPKACSSS 224
At-LYP2  YKTRTSDTLGSIADSVYGGLVSPQIQVAN---SETDLSVLDVGTKLVIPLPCACFNGTDESLPALYLSYVVRGIDTMAGIAKRFSTSVIDLTVNVMAGAP-DINPGDILAVPLLACSSN 224
At-LYP3  YKTRP SDNLGSIADSVYGGLVSAEQIQEAN---SVNDP SLLDVGTSLVPLPCACFNGTDNLSLPAVYLSYVVKEDITLVGIAARRYSTIITDMMVNMAGAP-DVSSGDILAVPLSACASK 227
Os-LYP1  YVVFQDGLDAIARNVFNAFVITYQELAAAN---NIPDPNKINVSQTLWIPLPCSCDKKEEGS--NVMHLAYSVGKGENTSAAIAKYGVTESTLLTRNKIDDPKIQMGQILLDVPVCRSS 227
Os-LYP2  HIIQINDNMSYIAA-QEDDFVITYQELAAAS---NISHPDFLEVGQELWIPLPCSCDQVEGN--NVTHFAFKVRAADNVSKIAARFVKESTLLKINGITDPKNLTQSQILLDVPV---DY 218
Os-LYP3  YRIRAGDTILDALARGVFAGLVITYQDIAAAN---NVSDPNKIAVGQELWIPVPCSDPVAQG--FVVHYTYVVPVPGASVAALAQDFATTEATVLLALNRMPPDAKSLLAGQVLDVPLRACSSA 229
Os-LYP4  YVARPGDTLASVASSVYGGITTPDWISDSNGILGAKPDAAVDAGTTLFVPLHCACFGVDNGLP AVYLYTVAGKQDTVAAVAQRVYRITATDIMS VNDMATP-ELAAAGDII VVPLPACTSS 226
Os-LYP5  YAAFPADTLATVADGVFAGLAFADQIRNANAVASADPDAPLDPGQKLVPLPCVCFNS SDNNLPAVYLSYVVGVDTPVAIAASYETITVTDVMMVNMAGSP-IAAPGDILAIPLPG---- 229
Os-LYP6  YSARPADTLASVADVVFAGLASADQIRTAGLSAEDPDAPLDAGATLVVPLPCACFNSTDNHNP AVYLSYVVRVGTQVQSI AATHATTVDI SNVNMAGSP-IVAPGDILAIPLPACASM 230
    
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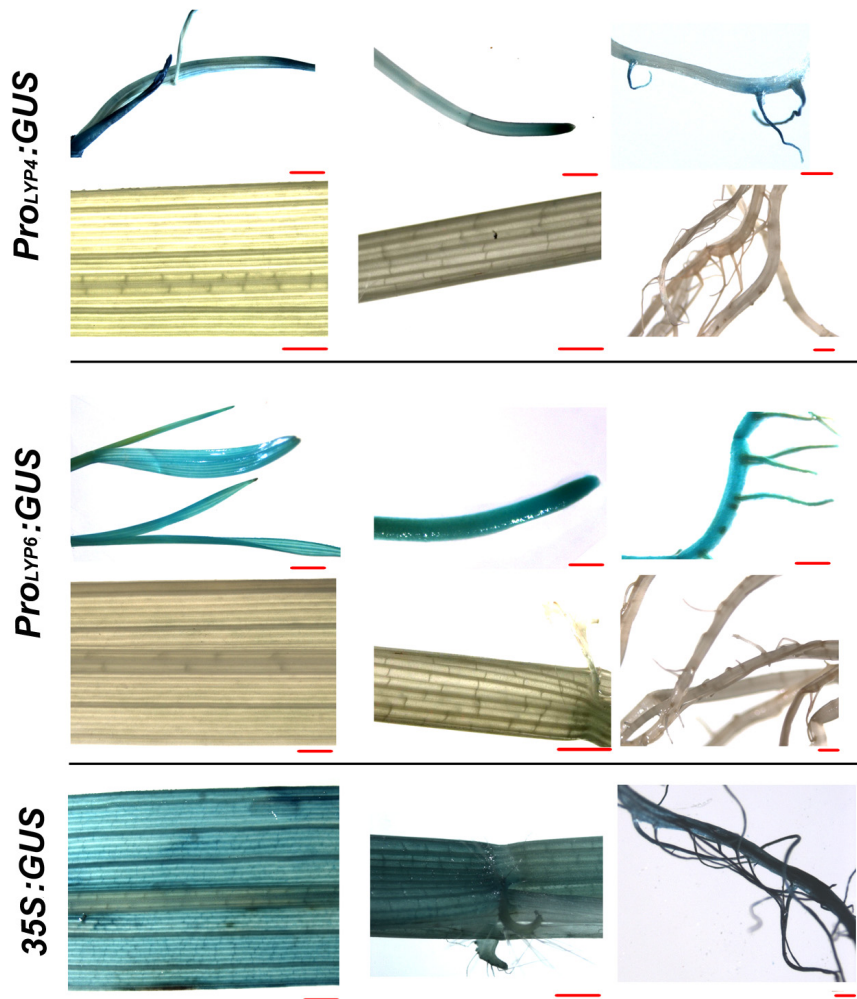
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At-LYP2  FPKYATDYG-LIIPNGSYALTAGHCVCQSCVIGSRSMYCEPASISV-SCSSMRCRNSNFMIGNITSQQSSSGCKLITCSYNGFASGTLITLMSLSLQPRCPGQQIAPLIAPPDNPVKEL 342
At-LYP3  FPRYASDFG-LIIPNGSYALAAAGHCVCQSCCALGSRNLYCEPASLAV-SCSSMQRNSNHLMLGNITVQQTSAQCNVITCDYNGIANGTLLTMLTRSLQPRCPGQQFAPLLAPPDTPVRDV 345
Os-LYP1  ISDTSADHNLMLLPDGTGYFTAGNCRCSSTT-YQLNCTAVQNK-GCPSVPLCNG-TLKLGETNG---TGCSTTCAYSYSNSSLIIQTSLATNQIT-----ACQRG----- 327
Os-LYP2  IVTTKPYH----- 226
Os-LYP3  ISSTAIARN-LLVPNGSYILLTANNIMCGCSYIT-WQLDCQPTQGI-SSSFCPASKCGDMFLGHTTSPSTSSCESFACSYAGYTHSTSTFTLLANLTTSTCNAAAMS PMAQQA----- 339
Os-LYP4  FPAFTADYG-LAVANGTYAVTANRCVQCSCGPGNLDLFCVPLADSTCSMOCANSMMNLGNFTLLMTSSGCSVITCSYGGFVNGTLLTLLTALKPQCPCGPHQYPLIPPTSSFFET 345
Os-LYP5  -----TCSSQ-----TLQITIS-----QMSRMVYCIELTVLS----- 255
Os-LYP6  FPNASDYG-LLVANGTYALTAGNVCQSCGPGDLKLYCTP ASLTA-SCSSMQRNSNHLMLGNVTAQSTSGGONVSCSYAGLVNGTITATSLSSGLQPTCPGPHQFPPLRATPIAVNQGS 348
    
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At-LYP1  -----AGPDNYASTLSSSFNFVIVLIQCALICLCLL----- 350
At-LYP2  MYLPSPPSPSPEFDDIAGGSSIAAIVPAAASPGGATVSSNSIPGNPANGPGGSIASCPLSYYSFIALLIPIGSCFFVF-- 423
At-LYP3  MYAPAPSP---DFD---GPGSIASSPRSS---MLPGGGILPGHPANGPAGSISTASASVSYYFITFLIASFSLALSS 416
Os-LYP1  -----GSGRSQFAR---SMWSMSVISFHMVLIICFL----- 356
Os-LYP2  ----- 226
Os-LYP3  -----HSAFRLASTWLRWELIVCLHVIFLCVSVLHHV----- 373
Os-LYP4  YLGPSPTP-----MASE-GGVMAGMAPTS-----TPAASGPPFAG--RHVVGDVLGAFALCLVGNLLW----- 401
Os-LYP5  ----- 255
Os-LYP6  YLAPSPAP-----GAGEAGGDIPFPFGSS-----NVSPANGP SGVSQAASVNRPHQIVALLSVALYFQM-- 409
    
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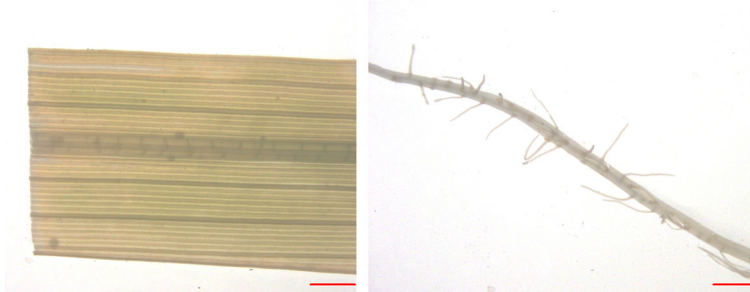
Supplemental Figure 1. Amino Acid Sequence Alignment of LYPs in Arabidopsis and Rice.

Full-length amino acid sequences encoded by At-LYP1 (At2g17120), At-LYP2 (At1g77630), At-LYP3 (At1g21880), Os-LYP1 (CEBiP, Os03g04110), Os-LYP2 (Os11g34570), Os-LYP3 (Os09g37600), Os-LYP4 (Os09g27890), Os-LYP5 (Os02g53000) and Os-LYP6 (Os06g10660) were aligned using the ClustalW program. The two characteristic LysMs in these LYPs are indicated by blue lines, and the ω-sites of GPI anchor modification in Os-LYP4 and Os-LYP6 are indicated by red lines.



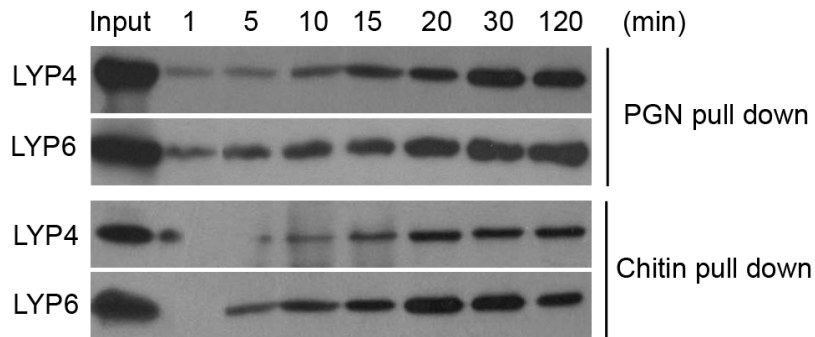
Supplemental Figure 2. *LYP4* and *LYP6* Are Strongly Expressed in Rice Young Tissues.

For the indicated *Promoter:GUS* transgenic rice, from top left to bottom right: young leaves from 4-day-old plant, the primary root of 4-day-old plant, and the secondary roots of 6-day-old plant, blades of 4th leaves at the 5-leaf stage, leaf sheath at the 5-leaf stage, mature roots at the 5-leaf stage. As a positive control, the GUS staining in mature rice tissues of 35S:*GUS* (pCAMBIA1301) transgenic rice was conducted in parallel, from left to right: blades of 4th leaves at the 5-leaf stage, leaf sheath at the 5-leaf stage, mature roots at the 5-leaf stage. Scale bar= 1 mm.



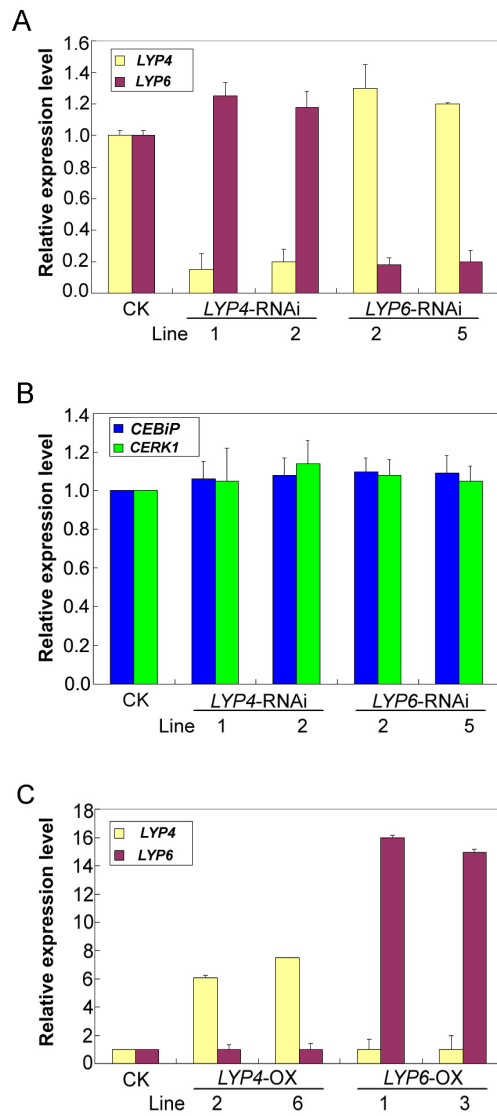
Supplemental Figure 3. No GUS Activity Is Induced by *X. oryzae* in pCAMBIA-1391Z Empty Vector Transgenic Rice.

Mature root (primary root in the 5-leaf stage) or leaf (the fourth leaf in the 5-leaf stage) from pCAMBIA-1391Z transgenic rice was immersed into *X. oryzae* suspension (10^5 cells/ml) for 2 hr before GUS staining. The pCAMBIA-1391Z binary plasmid is a promoter capture vector that contains an intact *GUS* gene without promoter. Scale bar = 1 mm.



Supplemental Figure 4. PGN and Chitin Binding Kinetic Analysis for LYP4 and LYP6.

50 μg of PGN_{xoo} or commercial chitin beads (NEB) were used to pull down 1 μg purified 6His-tagged recombinant Os-LYP4 or Os-LYP6 protein in solution after a co-incubation for the indicated period. Note that progressively increasing amounts of LYP proteins were precipitated by either glycan until the binding was saturated in 30 min for PGN_{xoo} or in 20 min for chitin. One of the three biological repeats with similar results is shown.



Supplemental Figure 5. Relative Expression Levels of *LYP4*, *LYP6*, *CEBiP* and *CERK1* in *LYP* RNAi or Over-expressing (OX) Transgenic Rice.

The transcripts of *LYP4* and *LYP6* (A) or *CEBiP* and *CERK1*(B) in different RNAi transgenic rice lines, or transcripts of *LYP4* and *LYP6* in different OX (C) transgenic rice lines were determined by qPCR. The expression level of *LYP4*, *LYP6*, *CEBiP* or *CERK1* in the empty vector transgenic rice (CK) was set as 1. The data represent means \pm SD.

Supplemental Table 1 Primers used in this study

Name	Sequence
<i>LYP4</i>, 6-RNAi	
LYP4-RiH1F	TCT <u>AAGCTT</u> CGA AGG AGG CGT CAT G
LYP4-RiP1R	ATA <u>CTGCAG</u> TGT GGG TGC CCT AAAA
LYP4-RiM2F	TCT <u>ACG CGT</u> CGA AGG AGG CGT CATG
LYP4-RiS2R	ATA <u>GTCGAC</u> TGT GGG TGC CCT AAAA
LYP6-RiH1F	TCT <u>AAG CTT</u> CAT TGT CGC ACC TGG T
LYP6-RiP1R	ATA <u>CTG CAG</u> ACT CTG CAC ACG AAT T
LYP6-RiM2F	TCT <u>ACG CGT</u> CAT TGT CGC ACC TGG T
LYP6-RiS2R	ATA <u>GTC GAC</u> ACT CTG CAC ACG AAT T
Promoter of <i>LYP4</i>, 6	
PLYP4-F	CCCAAGCTTGCTGCATAATCGTTGAC
PLYP4-R	CGGAATTCGGTGCTTGCAGTATCTG
PLYP6-F	GAGGAATTCAaCCAACCTCTGCTTATTCAGT
PLYP6-R	<u>CTGCAG</u> ATTGGATGGAGCTTCGAGGGGGT
Localization	
GFP-F	TCT <u>GAA TTC</u> AGA GCC ATG GGC AAA GGA GAA
GFP-R	TCT <u>GTC GAC</u> TTT GTA TAG TTC ATC CAT GCC
N-signal of <i>LYP4</i> -F	AATTCTAGAATGCCACCACCCTTGCTC
N-signal of <i>LYP4</i> -R	AATGGATCCGCAGGACTCCAGCGTGCAG
<i>LYP4</i> -F	<u>CTCGAGT</u> CCTCCTCTTCCACCGCCTGC
<i>LYP4</i> -R	ATTCTCGAGTTACCACAGCAGGTTGCC
N-signal of <i>LYP6</i> -F	<u>TCTAGA</u> ATGGCGGGGTGGCCGGCG
N-signal of <i>LYP6</i> -R	<u>GGATCCCC</u> CGCGCACGGCTCGAT
<i>LYP6</i> -F	<u>GTCGAC</u> GCGGACACGTGCGCCGCG
<i>LYP6</i> -R	<u>GGTACC</u> TCACATCTGGAAGTACAA
q PCR	
Actin-F	AGGCTCCTCTCAACCCCAAG
Actin-R	TTTCTGGTCATAGTCCAGG
<i>LYP4</i> -F	GCACAATTCTCACCACGTTAA
<i>LYP4</i> -R	AGTGAGTGGCAGACAAATCG
<i>LYP6</i> -F	ATTGCCACGTCGCTCTCCTC
<i>LYP6</i> -R	CAATACACACAGCCAGCAAC
MLO-F	GGCTTCTGGTACACCGGAGAA
MLO-R	TCCATTTCTTCATTTTGAGACG
Os-WRKY13F	AGCCCATCAAGGGCTCTCCCTAC
Os-WRKY13R	TCCGTCAGCCACCGGCTCAG
β -Glu-F	AGCCCGACATGACCGAAGT
β -Glu-R	TGGGCCGGGCCTAATCT
PAL1F	GGGCAACCCAGTGACCAA
PAL1R	CGATTGCCTCGTCGGTCTT
Protein expression	
HisLYP4-F	TCAGAATTCAAGTCGACGCTGGAGTCCTGCTC

HisLYP4-R	TATCTCGAGCGCCGCGGGGTGCTCGTCGG
HisLYP6-F	ATTGAATTCATCGAGCCGTGCGCGGGGGGCG
HisLYP6-R	ATTCTCGAGGCCGTTTGCAGGAGAAACGTT
HisCERK1-F	GAATTCAGCGCCGGGTGCGACCTCGCG
HisCERK1-R	CTCGAGCCTGCTATAGCTCCTGCAGAA
