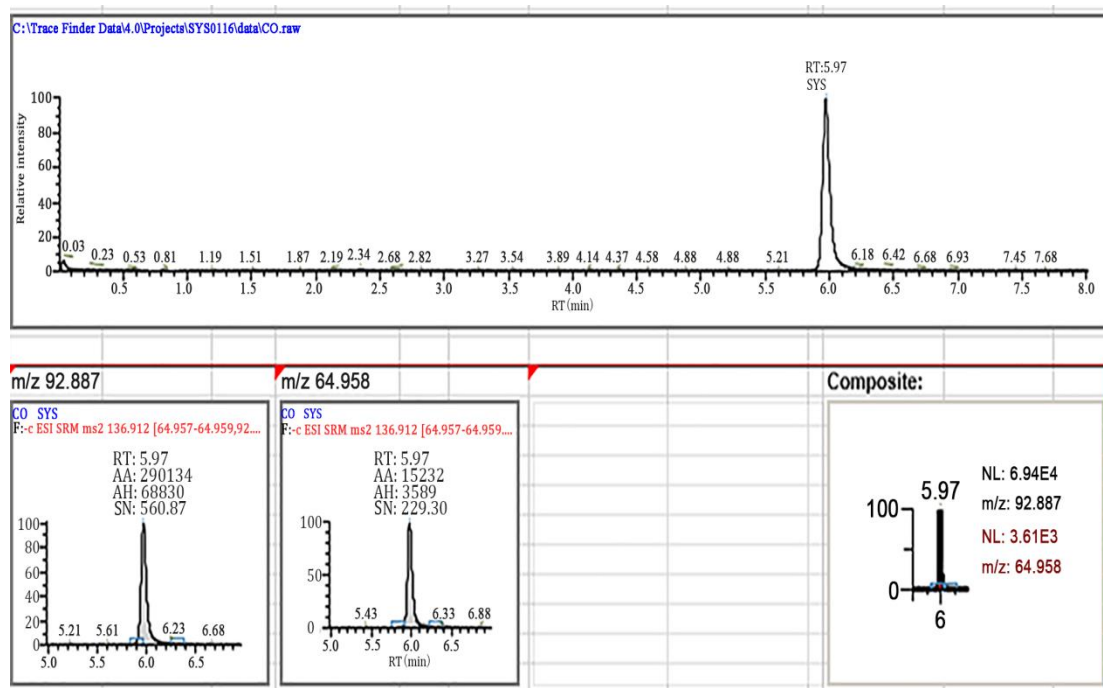


## Supplement Materials

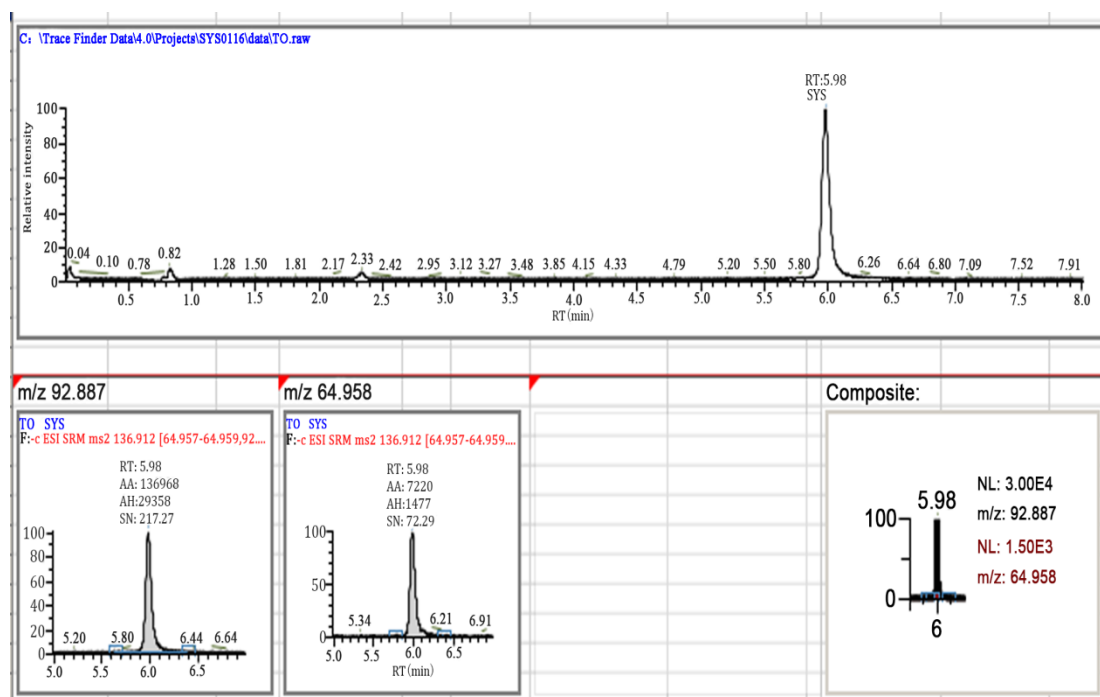
### Wild *Rosa* endophyte M7SB41-mediated host plant's powdery mildew resistance

Yi Zhao, Wenqin Mao, Wenting Tang, Marcos Antônio Soares, Haiyan Li\*



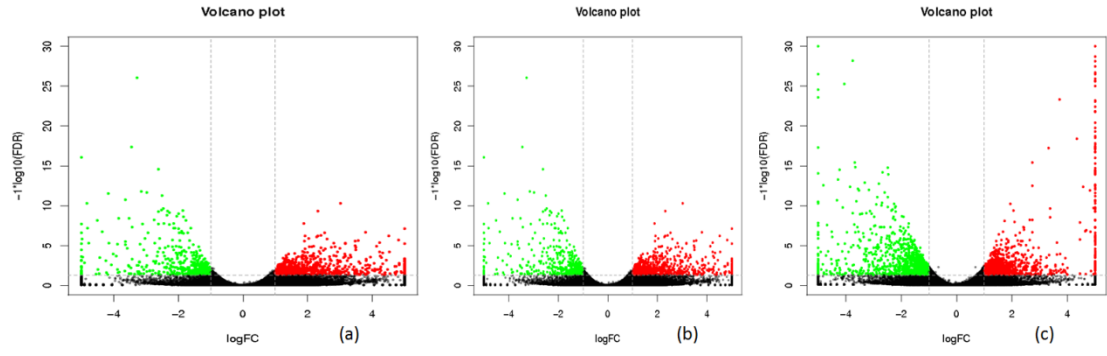
(a)

\*: Corresponding author, E-mail: lhyxrn@163.com; Tel. +86 (871)5920751; Fax +86 (871) 5920570.

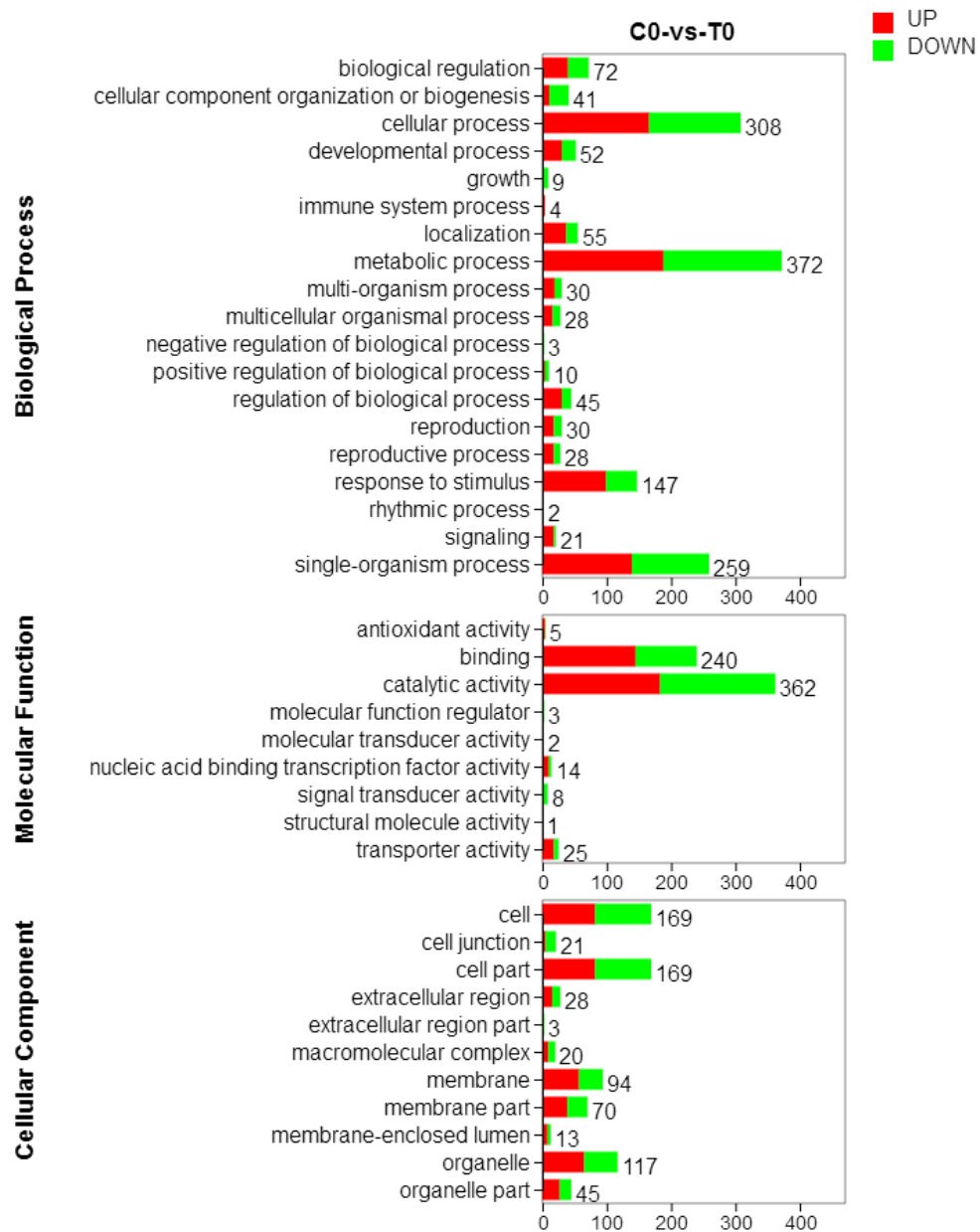


(b)

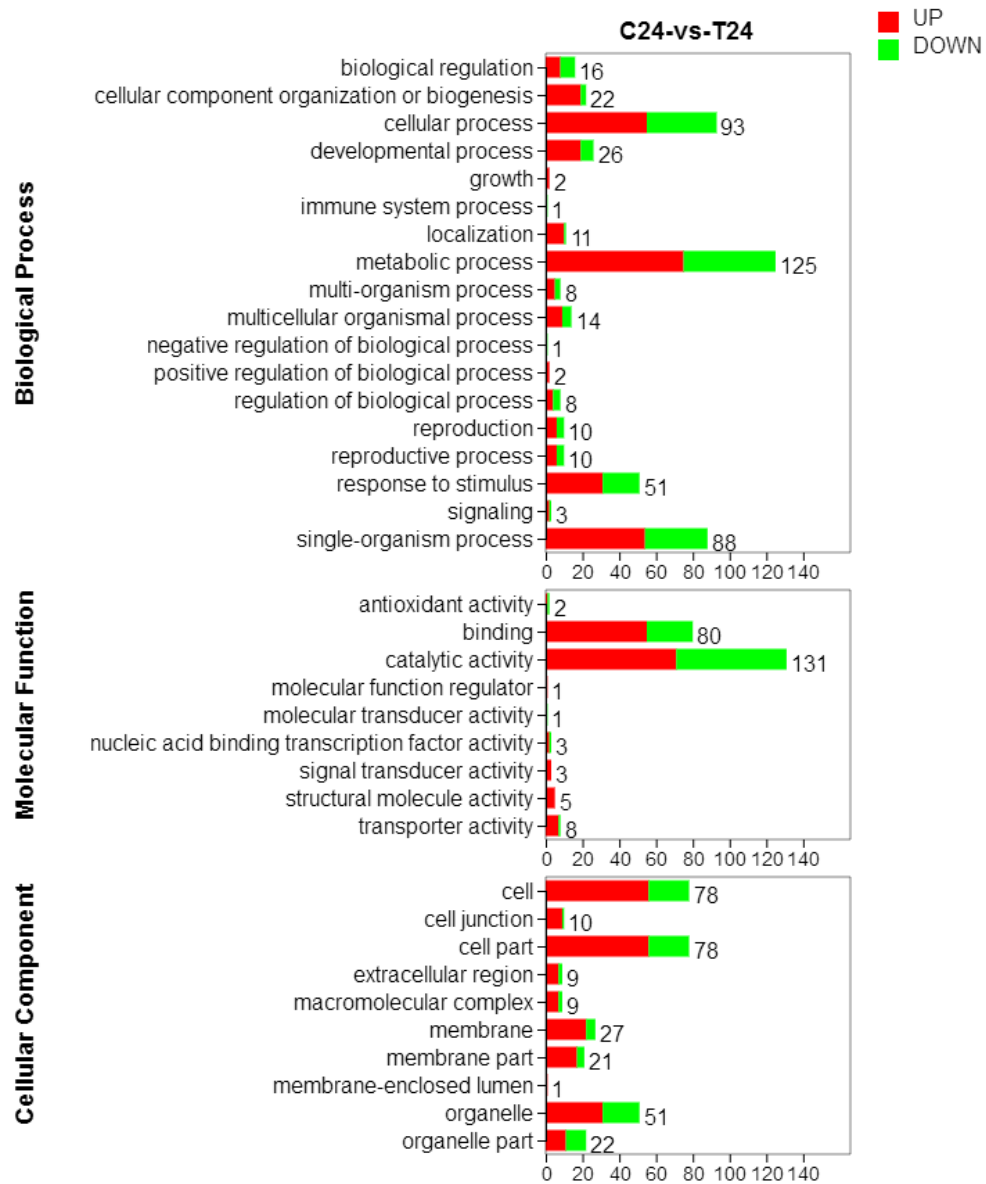
**Fig. S1** Chromatogram and mass spectrum of salicylic acid in tobacco leaves of E+ and E- group. (a) and (b) represent the total ion chromatogram, quantitative ion and qualitative ion of salicylic acid in E + and E - group, respectively.



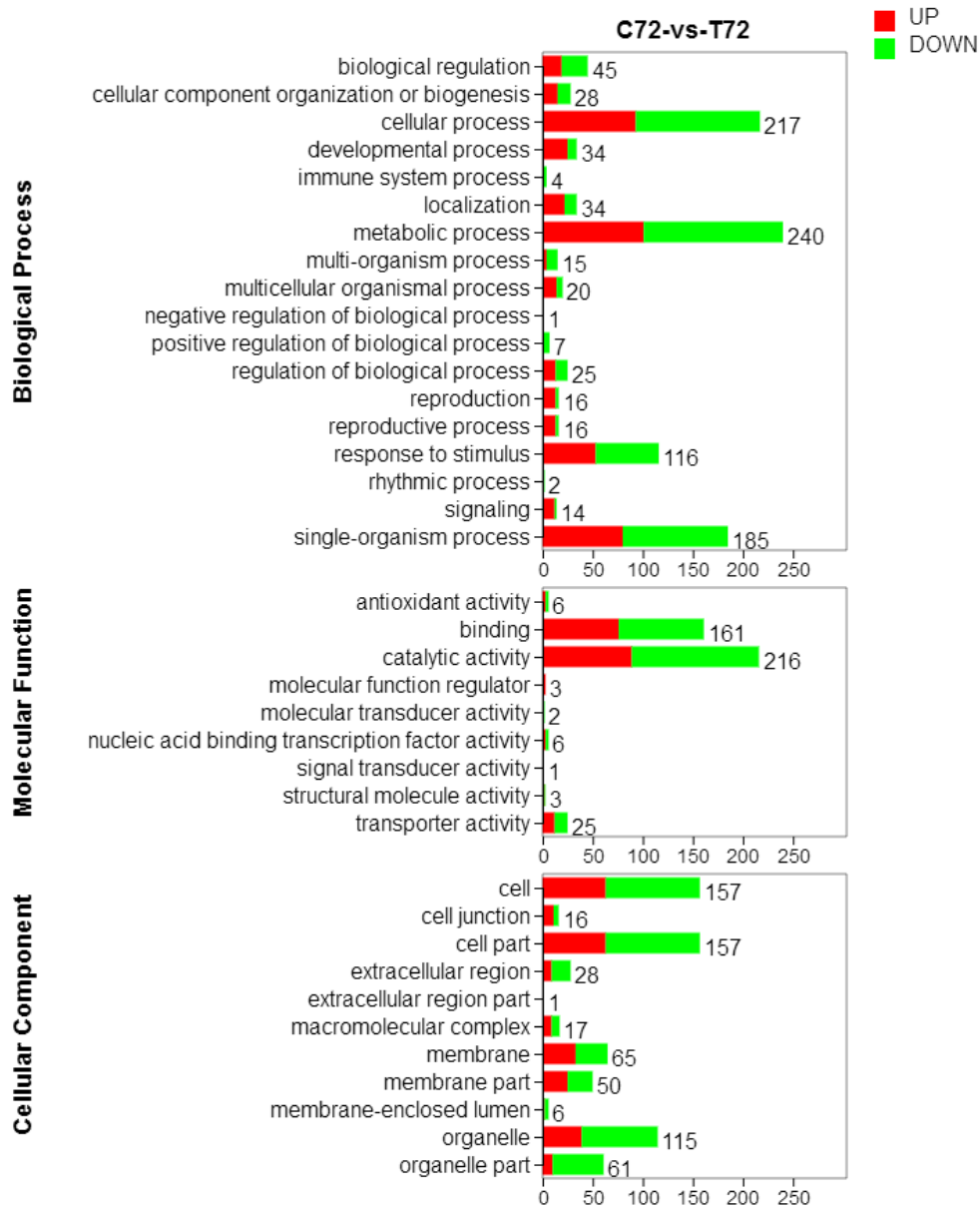
**Fig. S2** E- vs E+ DEGs volcano plot. Volcano plot of the differentially expressed genes (E- vs E+) at (a) 0, (b) 24 and (c) 72 hr of infection with powdery mildew. Red: Significantly up-regulated genes; Green: Significantly down-regulated genes; Black: Not differential expressed.



(a)

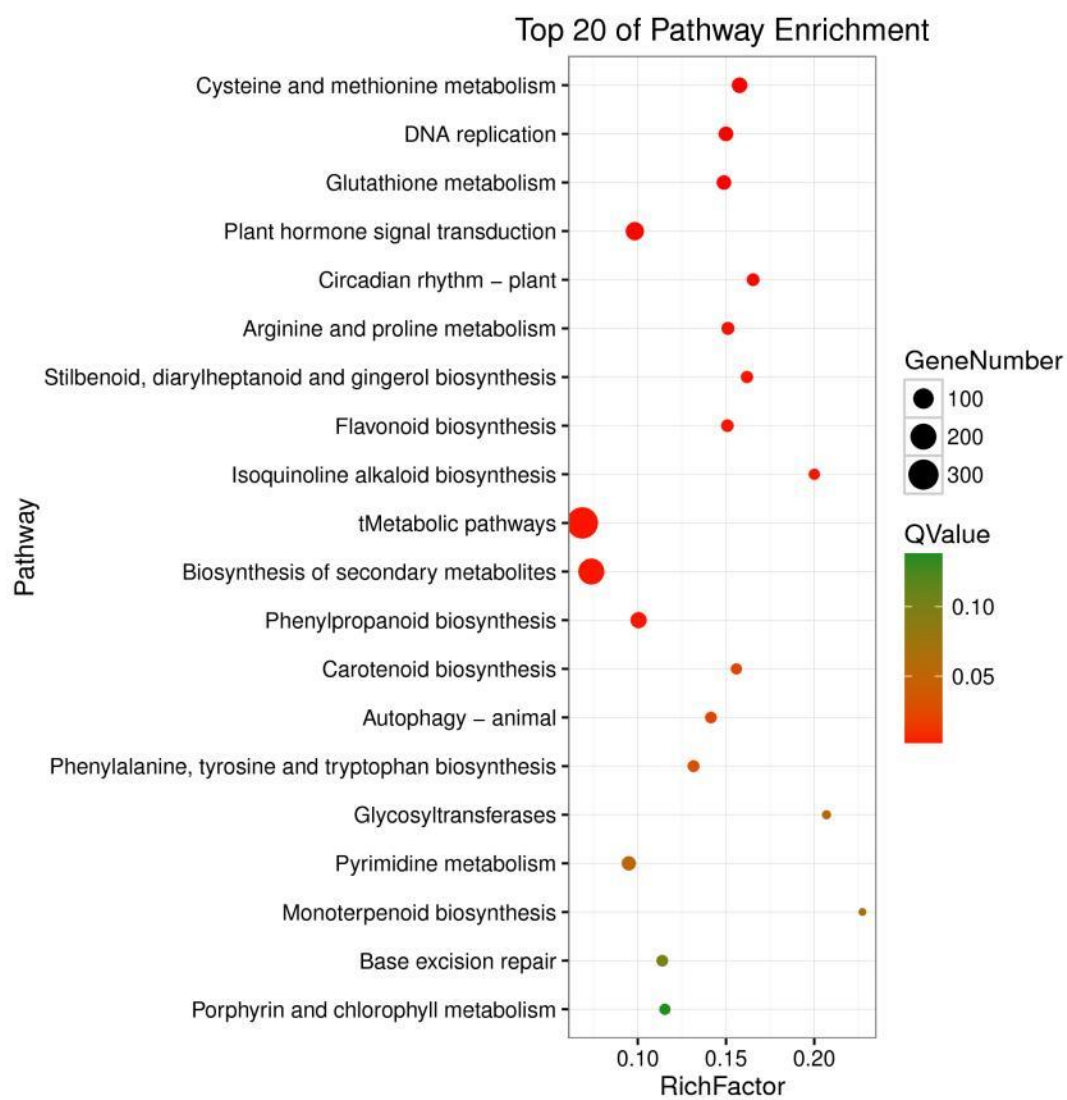


(b)



(c)

**Fig. S3** Gene ontology (GO) classification histogram of E- vs E+ DEG. Gene ontology classification of the differentially expressed genes at (a) 0, (b) 24 and (c) 72 hr of infection with powdery mildew; Red: Significantly up-regulated genes; Green: Significantly down-regulated genes.

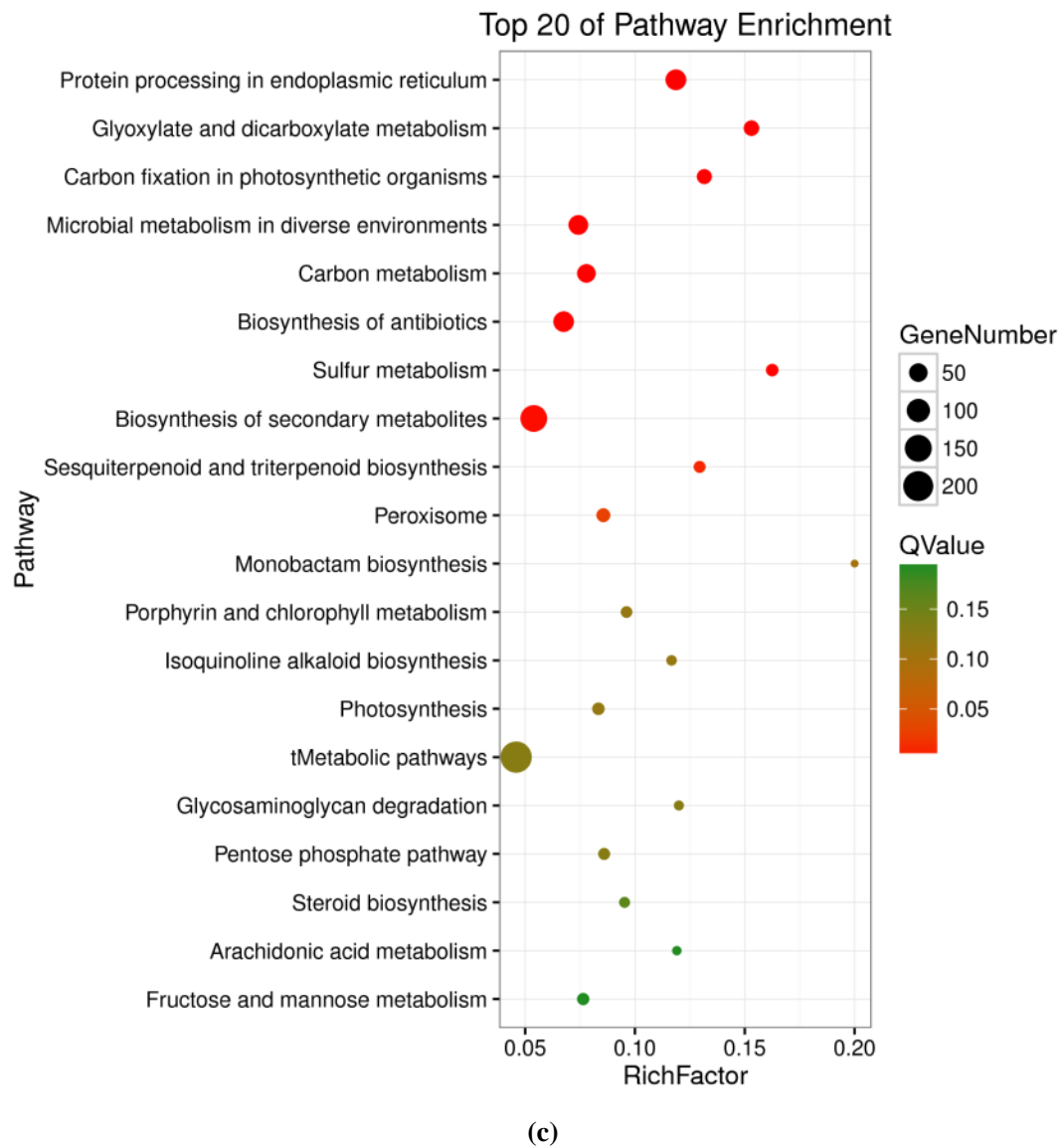


(a)

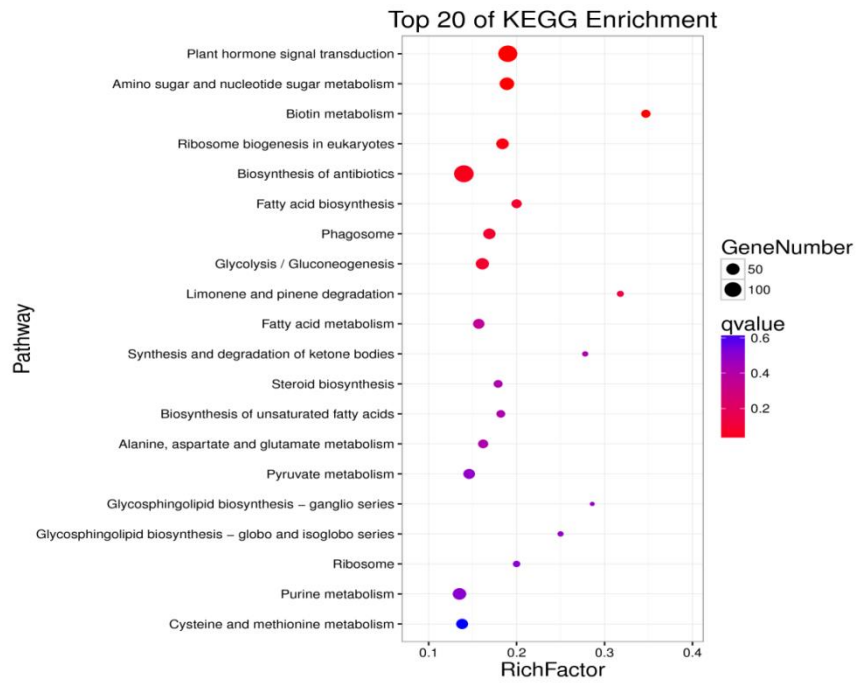


(b)

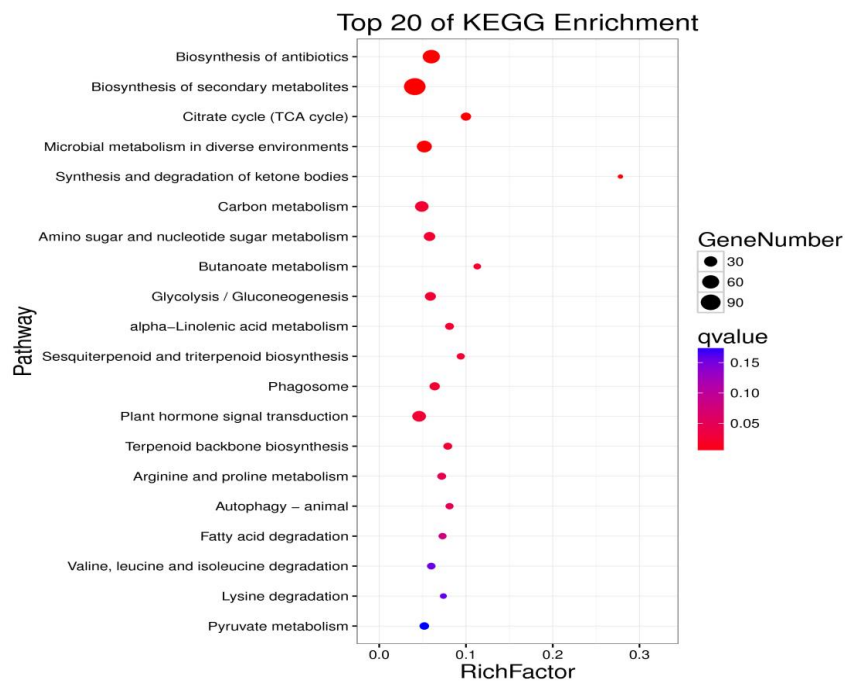




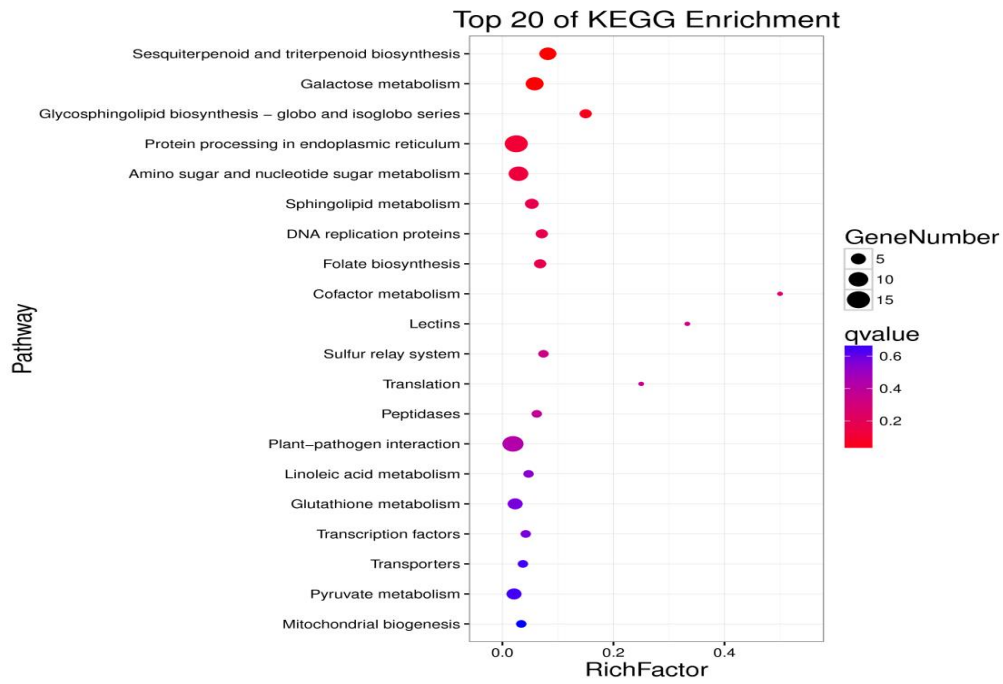
**Fig. S4** KEGG enrichment bubble chart of E- vs E+ DEGs. KEGG enrichment bubble chart of the differentially expressed genes at (a) 0, (b) 24 and (c) 72 hr of infection with powdery mildew. Q value is characterized by different colors, as shown in the example on the right, and red indicates  $Q < 0.05$ .



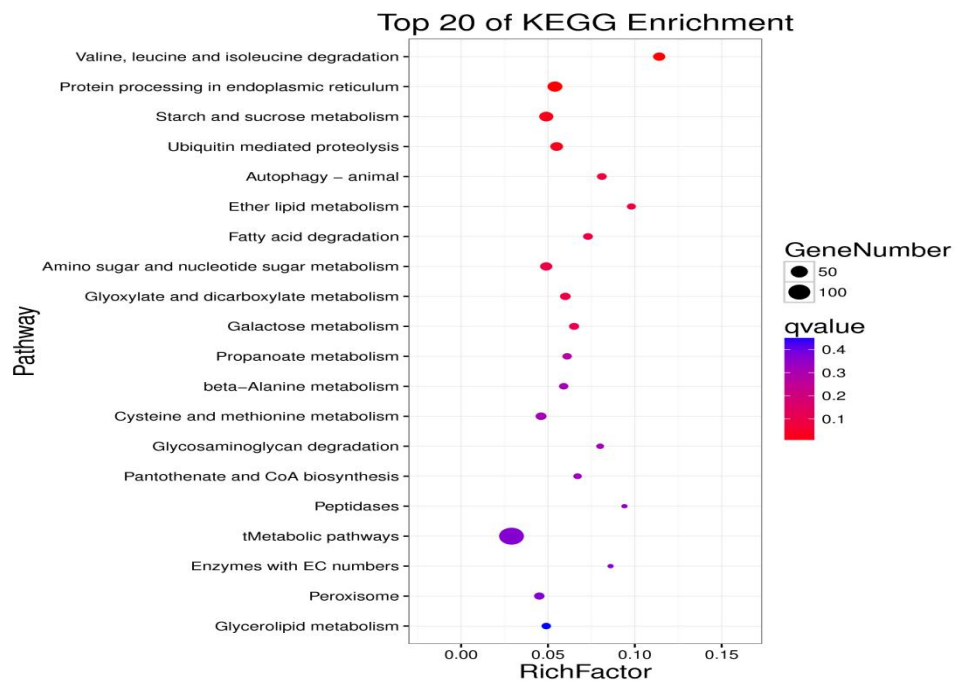
(a)



(b)



(c)



(d)

**Fig. S5** KEGG enrichment bubble chart of profile 1 and profile 4. (a) (b) showed KEGG enrichment bubble chart of profile1 in E- and E+ plants, respectively; (c) (d) showed KEGG enrichment bubble chart of profile4 in E- and E+ plants, respectively. Q value is characterized by different colors, as shown in the example on the right.

**Table S1** UHPLC–MS/MS parameters for the quantification of SA

Compound	Polarity	Precursor (m/z)	Product (m/z)	Collision energy(v)	RF Lens (v)
Salicylic	Negative	136.912	64.958	27.55	57
acid	Negative	136.912	92.887	15.61	57

**Table S2** Primers used for qRT-PCR validation

Gene	Accession number	Primer name	Primer sequence
Efl $\alpha$	AF120093	Efl $\alpha$ -F	GTATGATGAAATCGTGAAGG
		Efl $\alpha$ -R	CAGAGATGGGGACAAAGG
JAR1-like isoform	XM_016588992.1	JAR1-like isoform-F	GTCAGTGTCCCGTCCATA
		JAR1-like isoform-R	CGTTTACTCCAACCCATC
WRKY40	XM_016651389.1	WRKY40-F	GTGAAAGATGAGGCAGGT
		WRKY40-R	GTTGTTGGGATTGGAGAT
JAR1-like isoform	XM_016630684.1	JAR1-like isoform-F	TTGGAAGAAAATGGAGGG
		JAR1-like isoform-R	TGTGGGTGACAATGGGTA
CERK1	XM_016603843.1	CERK1-F	GCTGGCTGGTTTGGTTTA
		CERK1-R	TGATGGAGGTGGTCTTCG
BGLU like	XM_016617986.1	BGLU like-F	TCCTCCCATCTACATCAC
		BGLU like-R	TAAAACCAGCATCCCATT
WRKY31	XM_016651798.1	WRKY31-F	ACTTTACTCCCTTGTTCC
		WRKY31-R	ATGTTGAGGCGTTCTGTC
WRKY7	XM_016618988.1	WRKY7-F	CGGTTCTACGGAAAGTCG
		WRKY7-R	AAGGGGTAACGGAGGCAA
RBOHC	XM_016650414.1	RBOHC-F	CAAAGAGGAGGCGAAAGT
		RBOHC-R	CACACAGGGACCCATGAC

**Table S3** The results of mapped reads of 18 samples. T: Treatment (E+ plants , inoculated with endophytes *Seimatosporium* sp.); C: control (E- plants, without *Seimatosporium* sp. inoculation) respectively; 0, 24 and 72 represent 0, 24 and 72 hours of infection with powdery mildew, respectively; 1, 2, and 3 represent triplicate samples.

Sample	Total Reads	Unmapped Reads	Unique Mapped Reads	Multiple Mapped Reads	Mapping Ratio
T0-1	35516458	2752088	32215624(90.71%)	548746 (1.55%)	92.25%
T0-2	32860452	2519239	29810829 (90.72%)	530384 (1.61%)	92.33%
T0-3	33375618	2548923	30279133 (90.72%)	547562 (1.64%)	92.36%
T24-1	32862502	2416784	29963176 (91.18%)	482542 (1.47%)	92.65%
T24-2	37285354	2794928	33888022 (90.89%)	602404 (1.62%)	92.50%
T24-3	30025614	3708748	25843280 (86.07%)	473586 (1.58%)	87.65%
T72-1	24636064	3098761	21217297 (86.12%)	320006 (1.30%)	87.42%
T72-2	38199322	2794860	34841404 (91.21%)	563058 (1.47%)	92.68%
T72-3	36475100	2800971	33075431 (90.68%)	598698 (1.64%)	92.32%
C0-1	40703052	3255680	36740564 (90.26%)	706808 (1.74%)	92.00%
C0-2	40452040	3059232	36682720 (90.68%)	710088 (1.76%)	92.44%
C0-3	42052442	3280451	38028503 (90.43%)	743488 (1.77%)	92.20%
C24-1	36932384	2505963	33805849 (91.53%)	620572 (1.68%)	93.21%
C24-2	42284976	3092015	38490313 (91.03%)	702648 (1.66%)	92.69%
C24-3	44180332	3298097	40124741 (90.82%)	757494 (1.71%)	92.53%
C72-1	46034962	3354260	41888924 (90.99%)	791778 (1.72%)	92.71%
C72-2	36042370	2616973	32868117 (91.19%)	557280 (1.55%)	92.74%
C72-3	39031126	2882987	35528513 (91.03%)	619626 (1.59%)	92.61%

**Table S4** Differential gene expression levels of selected up- or downregulated genes. Pairwise comparisons C0 vs T0, C24 vs T24, C72 vs T72 are shown. T: Treatment (E+ plants , inoculated with endophytes *Seimatosporium* sp.); C: control (E- plants, without *Seimatosporium* sp. inoculation) respectively; 0, 24 and 72 represent 0, 24 and 72 hours of infection with powdery mildew, respectively.

Accession number	Putative function	C0 vs T0	C24 vs T24	C72 vs T72
XM_016612404.1	TGA1-like	upregulated	-	-
XM_016654927.1	TGA-1a-like	upregulated	-	-
XM_016640845.1	TGA-1a-like	upregulated	-	-
XM_016625627.1	TGA6	-	upregulated	-
XM_016602112.1	TGA6-like	-	-	downregulated
XP_009768533.1	WRKY4	downregulated	-	-
XP_009587051.1	WRKY6	upregulated	-	-
XM_016580199.1	WRKY41	upregulated	-	-
XM_016581187.1	WRKY31	upregulated	-	-
XM_016581234.1	WRKY3	downregulated	-	-
XM_016607873.1	WRKY68	upregulated	-	-
XM_016610715.1	WRKY7	upregulated	upregulated	-
XM_016614949.1	WRKY49	downregulated	-	-
XM_016618988.1	WRKY7	upregulated	-	-
XM_016619314.1	WRKY7	upregulated	-	-
XM_016621642.1	WRKY40	downregulated	-	-
XM_016624990.1	WRKY41	upregulated	-	-
	isoform			
XM_016625844.1	WRKY11	upregulated	-	-
XM_016631125.1	WRKY65	upregulated	-	-
XM_016631674.1	WRKY22-like	upregulated	-	-
XM_016634340.1	WRKY44	downregulated	-	-
XM_016638899.1	WRKY41	upregulated	-	-
XM_016641002.1	WRKY53	upregulated	-	-
XM_016643087.1	WRKY7	upregulated	-	-
XM_016651798.1	WRKY31	upregulated	-	-
XM_016651389.1	WRKY40	downregulated	-	-
XM_016582122.1	WRKY70	-	downregulated	-
	isoform			
XM_016606924.1	WRKY69	-	downregulated	-
	isoform			
XM_016644013.1	WRKY7	-	upregulated	-
XM_016591510.1	WRKY50	-	-	downregulated
XM_016638899.1	WRKY41	-	-	upregulated
ABY59789.1	MES3	upregulated	-	-
XM_016588992.1	JAR1-like	upregulated	-	-
	isoform			

Accession number	Putative function	C0 vs T0	C24 vs T24	C72 vs T72
XM_016630684.1	JAR1-like isoform	upregulated	upregulated	-
XM_016584785.1	4CL	upregulated	-	-
XP_009759945.1	PAL	-	upregulated	-
XM_016588500.1	PAL	-	-	upregulated
XM_016617986.1	BGLU	downregulated	-	-
XLOC_023187	HCT-like	upregulated	-	-
XLOC_044024	HCT-like	upregulated	-	-
ncbi_107768362	HCT-like	upregulated	-	-
ncbi_107772942	HCT-like	upregulated	-	-
ncbi_107789426	HCT-like	upregulated	-	upregulated
ncbi_107796658	HCT	upregulated	-	upregulated
ncbi_107804864	HCT-like	upregulated	-	downregulated
ncbi_107826939	HCT-like isoform	-	-	upregulated
ncbi_107777955	CAD6	downregulated	-	-
ncbi_107789450	CAD1	upregulated	-	-
ncbi_107790164	CAD6	downregulated	-	-
ncbi_107798963	CAD6	upregulated	-	-
ncbi_107816761	CAD2	downregulated	-	-
ncbi_107767921	CCR2-like	upregulated	-	-
XLOC_025770	POD 51-like	upregulated	-	-
ncbi_107759554	POD 51-like	upregulated	-	-
ncbi_107762756	POD 66-like	downregulated	-	-
ncbi_107765883	POD 63-like	downregulated	-	-
ncbi_107770624	POD 12-like	upregulated	-	-
ncbi_107777661	POD 7-like	upregulated	-	-
ncbi_107782926	POD 7-like	upregulated	-	-
ncbi_107794292	POD 63-like	downregulated	upregulated	-
ncbi_107804632	POD 51-like	upregulated	-	upregulated
ncbi_107808759	POD 12-like	upregulated	-	-
ncbi_107813838	POD 12-like	downregulated	-	-
ncbi_107828946	POD 12-like	downregulated	-	-
ncbi_107794830	POD 21	-	upregulated	-
ncbi_107806425	POD3	-	upregulated	upregulated
ncbi_107807567	POD3-like	-	upregulated	upregulated
ncbi_107786793	POD6	-	upregulated	-
ncbi_107758994	POD19	-	-	downregulated
ncbi_107770624	POD12-like	-	-	upregulated
ncbi_107773042	POD N1-like	-	-	upregulated
ncbi_107794830	POD21	-	-	upregulated
ncbi_107815364	POD48-like	-	-	upregulated



Accession number	Putative function	C0 vs T0	C24 vs T24	C72 vs T72
XLOC_059410	CML21	upregulated	-	-
ncbi_107771773	CML18	upregulated	-	upregulated
ncbi_107813448	CML41	downregulated	-	-
ncbi_107817356	CML44	upregulated	-	-
ncbi_107817357	CML44	upregulated	-	-
ncbi_107819435	CML44	upregulated	upregulated	-
ncbi_107823367	CML41	-	upregulated	-
ncbi_107790990	CML1	downregulated	-	-
ncbi_107792965	CML1	downregulated	-	-
ncbi_107803626	CML1	downregulated	-	-
ncbi_107813304	CML3	upregulated	-	-
ncbi_107792571	CaM	-	upregulated	-
ncbi_107763763	CDPK17-like	downregulated	-	-
ncbi_107767341	CDPK-like isoform X2	downregulated	-	-
ncbi_107807275	calmodulin-like	upregulated	upregulated	-
ncbi_107768378	PR-1like	upregulated	upregulated	-
ncbi_107798618	PR-1like	upregulated	-	-
ncbi_107763263	PR-1c	-	-	downregulated
ncbi_107807832	PR-1b	-	-	downregulated
ncbi_107765038	PR-5 like	downregulated	-	-
ncbi_107770507	PR-10a like	upregulated	-	-
ncbi_107830187	PR-10a like	upregulated	-	downregulated
ncbi_107831906	PR-5 like isoform	upregulated	-	downregulated
ncbi_107832140	PR-5 like isoform	upregulated	upregulated	-
ncbi_107804128	PR-5 like	-	upregulated	-
ncbi_107766311	PR-4b	-	-	downregulated
ncbi_107791665	PR-1 like	-	-	downregulated
ncbi_107802320	PR-4a	-	-	downregulated
ncbi_107808479	PR-10a like	-	-	downregulated
ncbi_107823075	PR-10a like	-	-	downregulated
ncbi_107823159	PR-1 like	-	-	downregulated