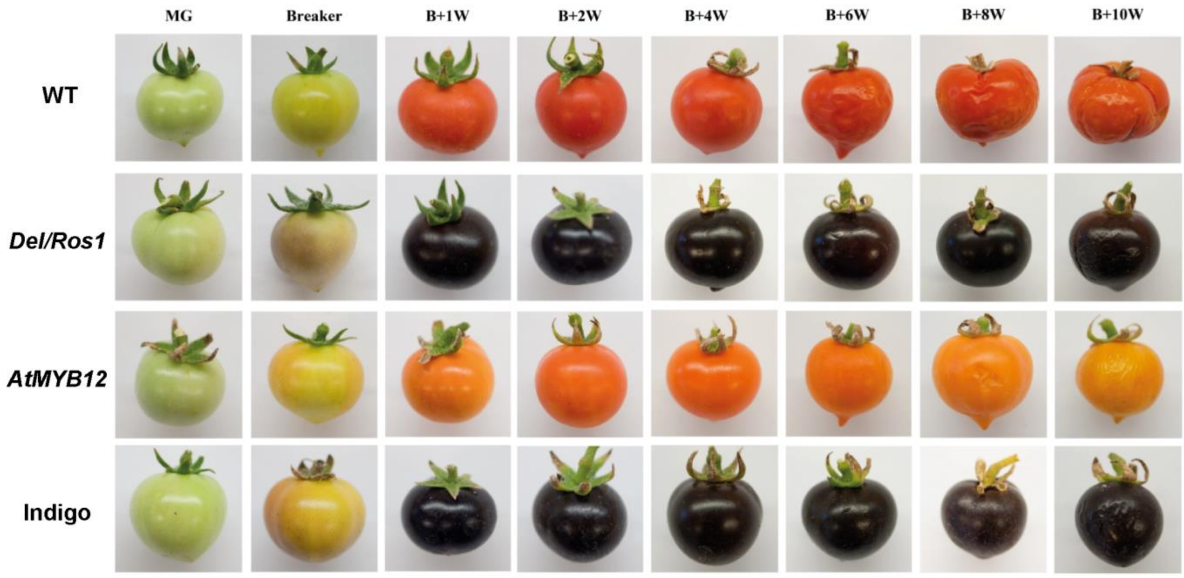
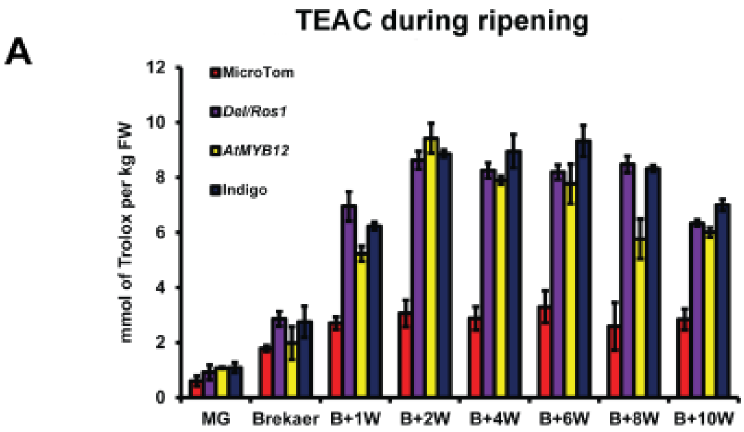
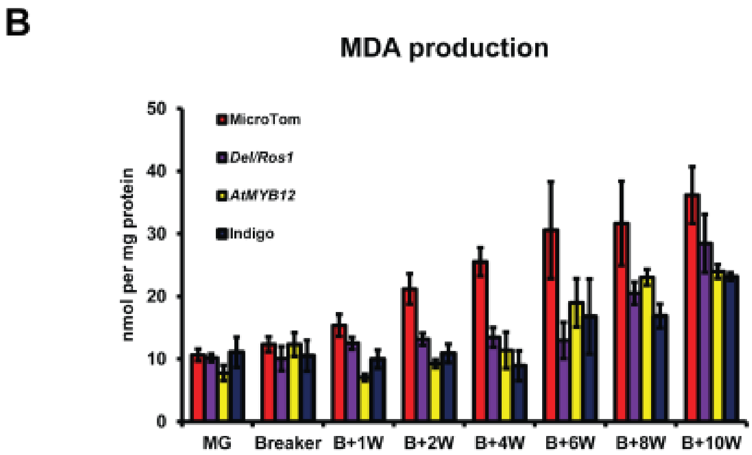
Supplemental data:



Supplemental Figure 1. Phenotypes of tomato fruit on the vine at different stages of ripening and over-ripening. For each stage, 8-12 fruit were checked and representative fruit are shown.



	MG	Breaker	B+1W	B+2W	B+4W	B+6W	B+8W	B+10W
MicroTom	a	ab	ab	b	ab	b	ab	ab
Del/Ros1	a	b	cd	e	de	de	de	c
AtMYB12	a	a	b	d	cd	cd	bc	bc
Indigo	a	a	b	d	d	d	cd	bc

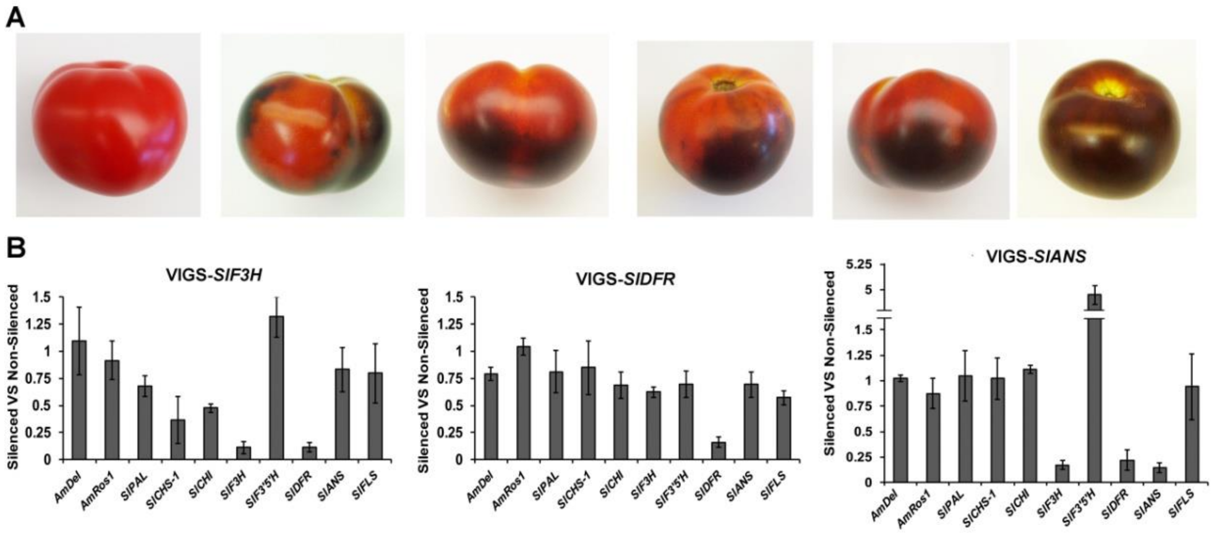


	MG	Breaker	B+1W	B+2W	B+4W	B+6W	B+8W	B+10W
MicroTom	a	ab	ab	abc	abc	abc	bc	c
Del/Ros1	a	a	a	a	a	a	ab	b
AtMYB12	a	ab	a	ab	ab	bc	c	c
Indigo	ab	ab	ab	ab	a	ab	ab	b

Supplemental Figure 2. The high antioxidant capacity of *AtMYB12* tomatoes is not maintained as long as for *Del/Ros1* fruit.

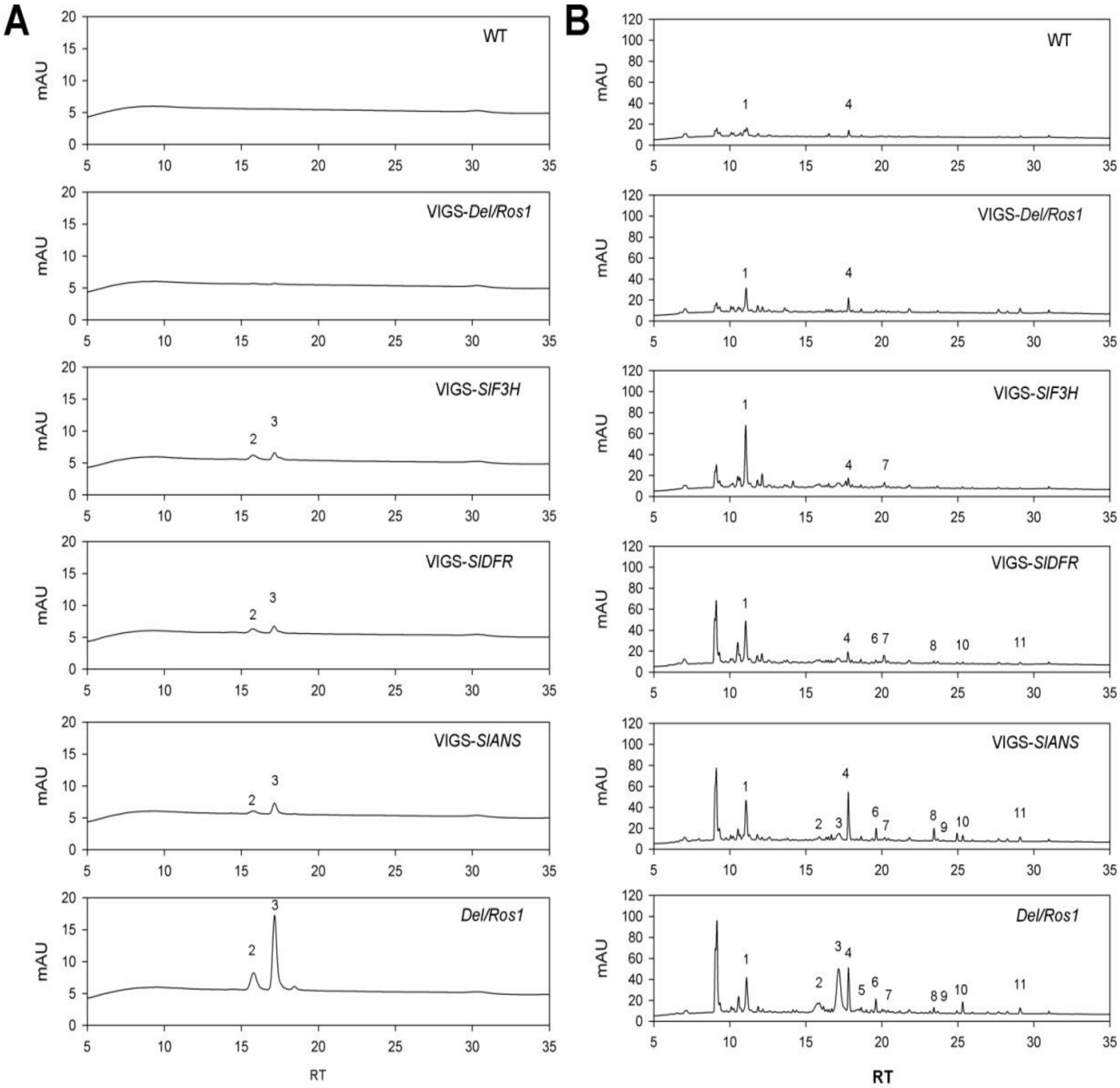
(**A**) Total antioxidant capacity of hydrophilic compounds in different tomato lines during ripening. Different letters indicate significantly different values at $p < 0.05$ (one way ANOVA, Tukey post hoc test) within the same genotype.

(**B**) MDA content of different tomato lines during ripening. Error bars show SEM (n=3). Different letters indicate significantly different values at $p < 0.05$ (one way ANOVA, Tukey post hoc test) within the same genotype.



Supplemental Figure 3. VIGS of anthocyanin biosynthetic genes in *Del/Ros1* tomatoes alters the anthocyanin biosynthetic pathway.

(**A**). From left to right, phenotype of WT, VIGS-*Del/Ros1*, VIGS-*SlF3H*, VIGS-*SlDFR*, VIGS-*SlANS* and *Del/Ros1* MoneyMaker fruit. Pictures were taken at two weeks after breaker. (**B**) Expression of anthocyanin biosynthetic genes in VIGS fruit. Data are represented by comparing the expression of silenced sectors to the non-silenced sectors on the same fruit. Error bars show SEM (n≥2).



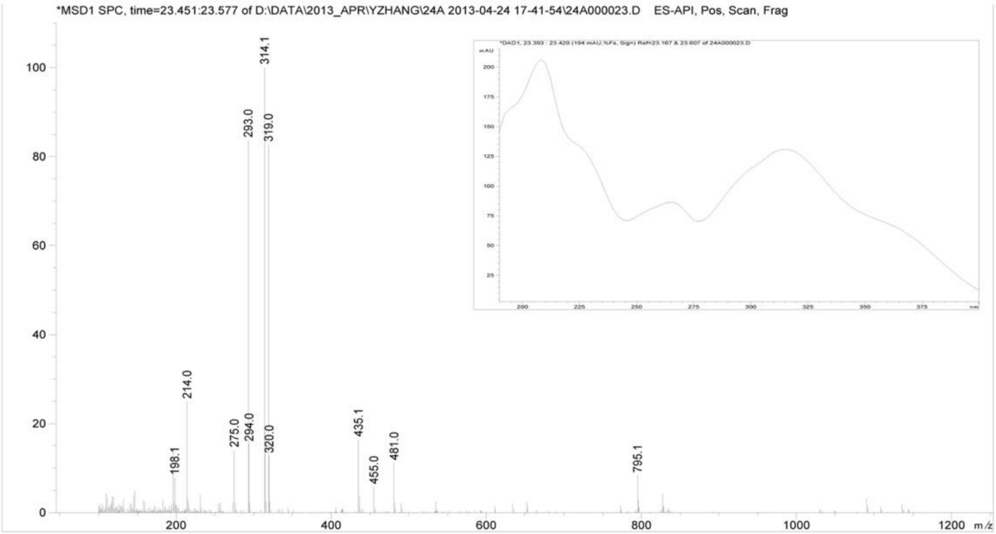
Supplemental Figure 4. Silencing of anthocyanin biosynthetic genes in *Del/Ros1* tomatoes causes the accumulation of different flavonoid compounds

(**A**) Comparative HPLC analysis of methanol extracts of tomato fruit recorded at 525 nm showing the accumulation of anthocyanins in different fruit. (**B**) Comparative HPLC analysis of methanol extracts of tomato fruit recorded at 280 nm showing the accumulation of phenylpropanoid compounds in different fruit. Compounds identified: 1. Cholorgenic acid, 2. Delphinidin 3-(trans-coumaroyl)-rutinoside-5-glucoside (Del-Cou-Rut-Glc), 3. Petunidin 3-(trans-coumaroyl)-rutinoside-5-glucoside (Pet-Cou-Rut-Glc), 4. Rutin, 5. Malvidin 3-(trans-coumaroyl)-rutinoside-glucoside (Mal-Cou-Rut-Glc), 6. Kaempfero-3-O-rutinoside, 7. Naringin, 8. Myricetin-coumaroyl-rutinoside (Myr-Cou-Rut), 9. Methyl myricetin-coumaroyl-rutinoside (MeMyr-Cou-Rut), 10. Quercetin-coumaroyl-rutinoside (Que-Cou-Rut). 11. Naringenin.

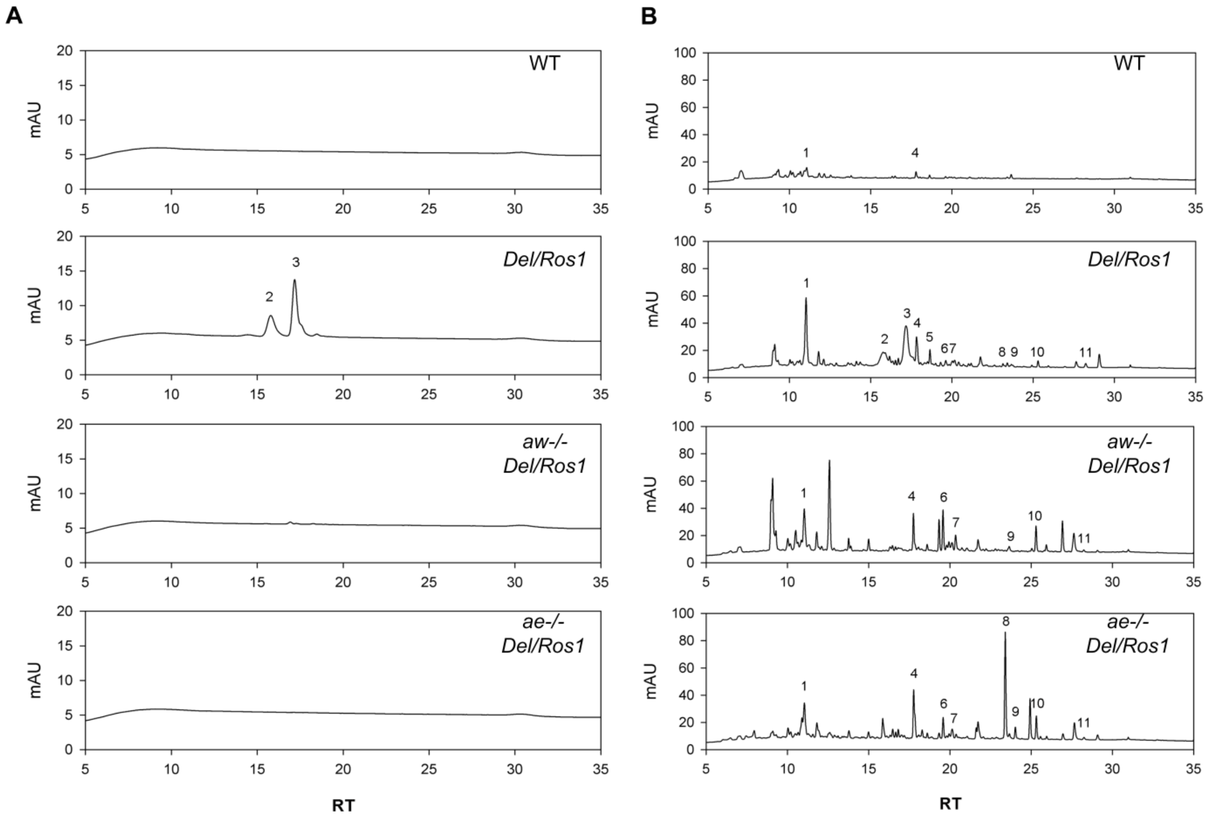
A

Compound	RT (min)	mass	Other masses	Reference
Del-Glc-Cou-Rut	15.86	919.1	757	Butelli et al. 2008
Pet-Glc-Cou-Rut	17.26	933.1	771	Butelli et al. 2008
Rutin	17.83	633	303, 465	Luo et al. 2008
Kae-3-Rut	19.64	617	287, 449	Luo et al. 2008
Myr-Cou-Rut	23.53	795	319	This work

B



Supplemental Figure 5. Compounds identified by LC-MS. (**A**) List of major compounds identified by LC-MS. Abbreviations were used as described in Figure S4. (**B**) MS and UV spectrum for Myr-Cou-Rut.



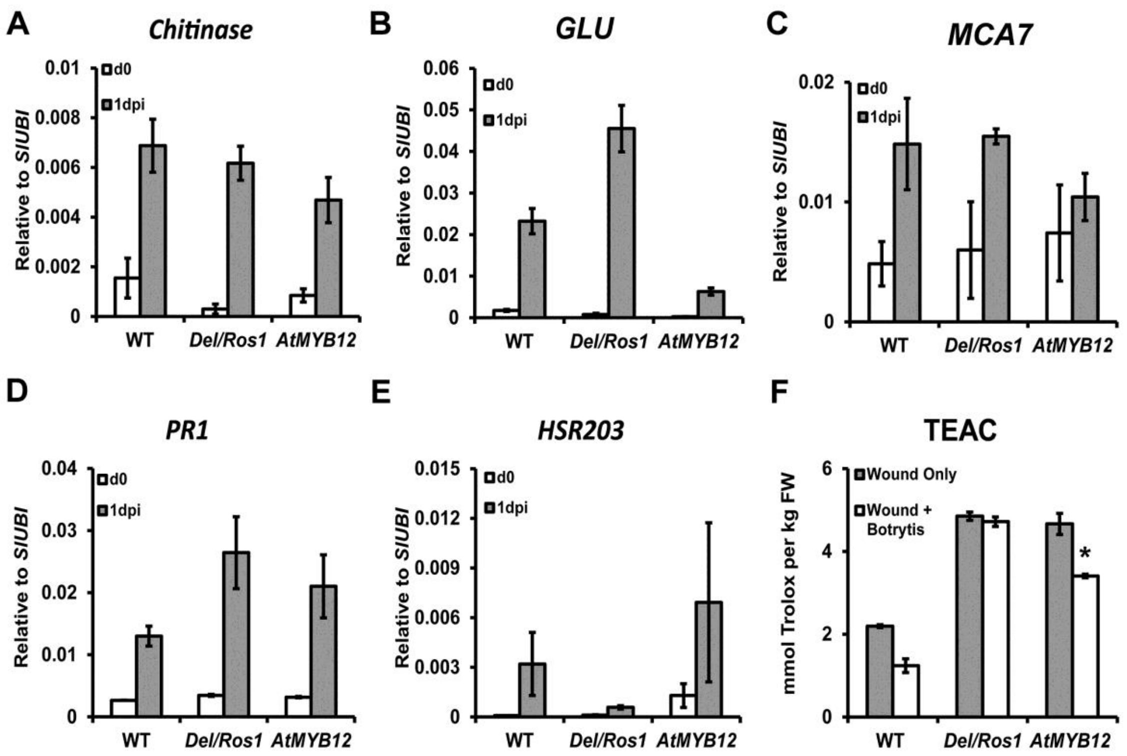
Supplemental Figure 6. Crossing anthocyanin mutants with *Del/Ros1* tomato generates hybrids containing different flavonoid compounds.

(**A**) Comparative HPLC analysis of methanol extracts of tomato fruit recorded at 525 nm showing the accumulation of anthocyanins in fruit of different lines.

(**B**) Comparative HPLC analysis of methanol extracts of tomato fruit recorded at 280 nm showing the accumulation of flavonoids and other phenylpropanoid compounds in different fruit. Annotation of compounds is the same as in Supplemental Figure 7.

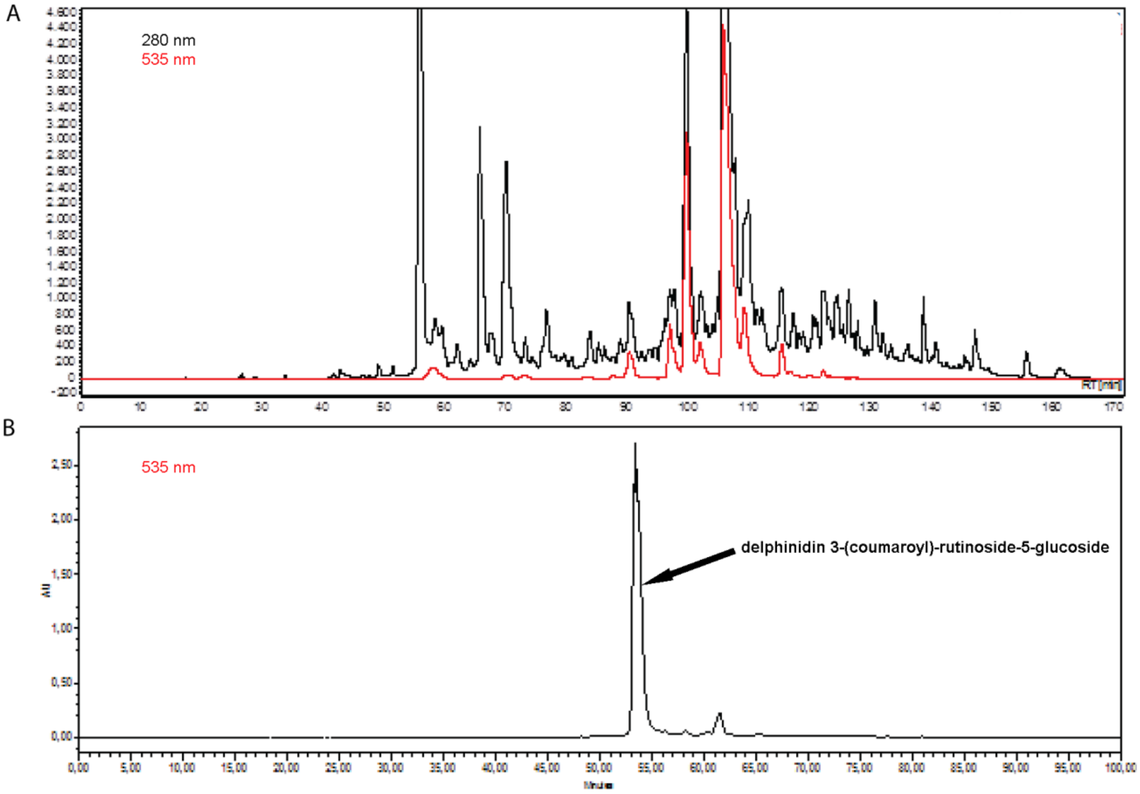
Supplemental Figure 7. *AtMYB12* MoneyMaker tomatoes are susceptible to *B. cinerea*.

From left to right, WT, *Del/Ros1* and *AtMYB12* MoneyMaker tomatoes infected with *B. cinerea*. White dots represent lesion margins. Fruit were harvested at 7 dpb. Pictures were taken at 3 dpi.



Supplemental Figure 8. Expression of markers for pathogen response in WT and *AtMYB12* tomatoes following *B. cinerea* inoculation.

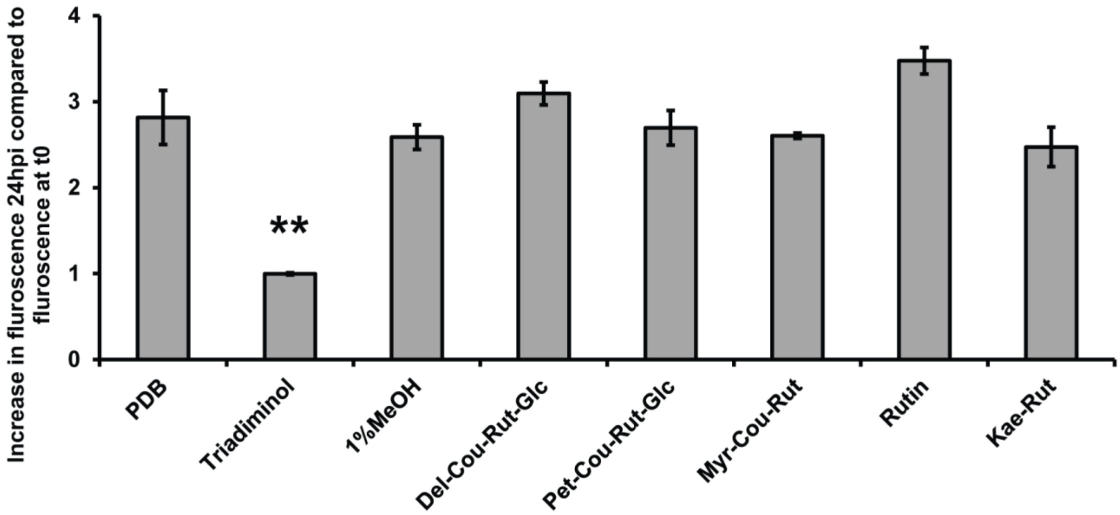
(**A**)-(**E**) RT-qPCR of pathogen response genes before and after *B. cinerea* infection. (**A**) *Chitinase* (*SlChi*), (**B**) *β -1,3-glucanase* (*SlGLU*), (**C**) *Metacaspase 7(SlMCA7),* (**D**) *Pathogenesis-related protein 1*(*SlPR1*) and (**E**) *Hypersensitivity-related gene 203* (*SlHSR203*). (**F**) The total antioxidant capacity of uninfected and infected fruit. Both wound only and wound + infection fruit were analyzed at 3 dpi. Error bars show the SEM, n=2. * indicates $p<0.05$ compared to wound only samples.



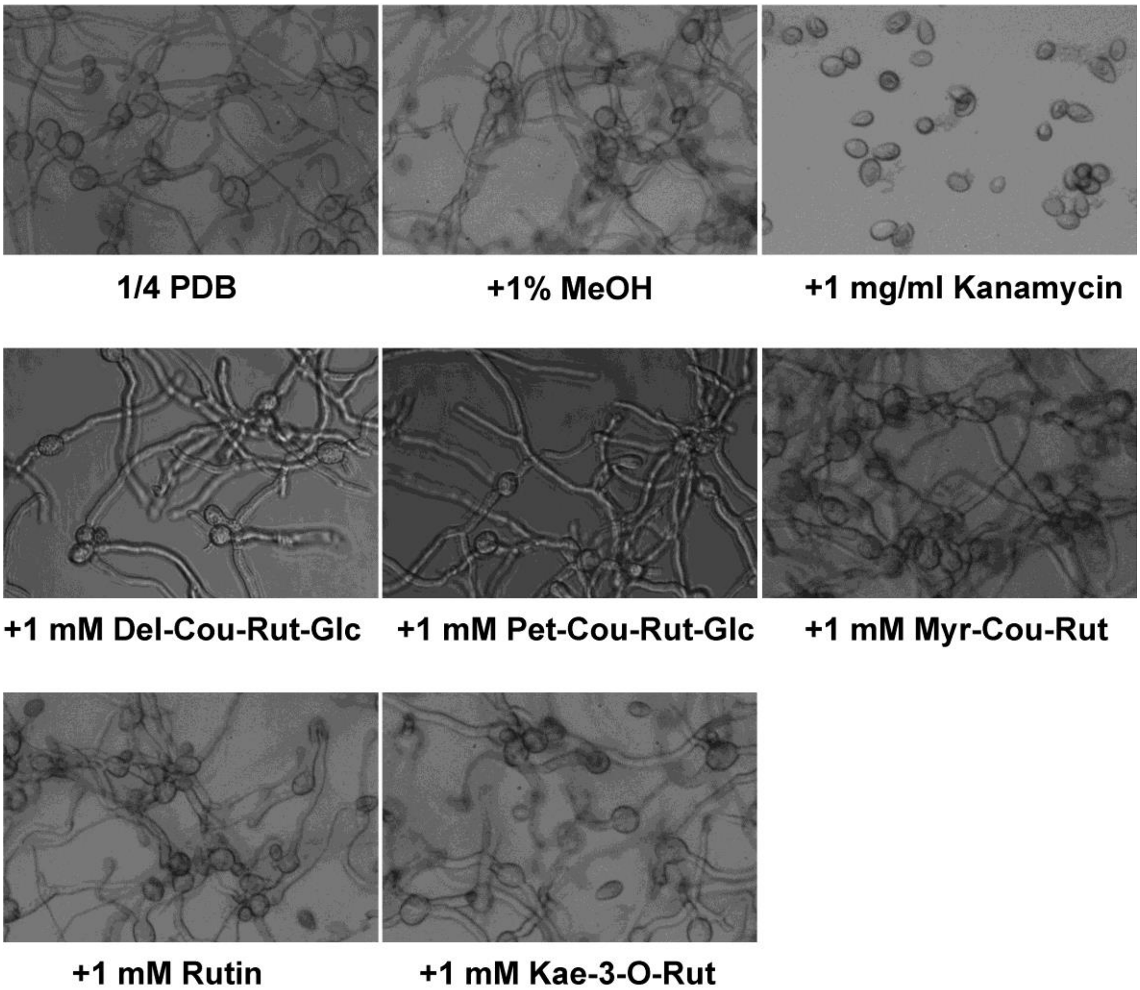
Supplemental Figure 9. Preparative HPLC to purify anthocyanins from the fruit of delphinidin-producing *Del/Ros*1 tomatoes.

(**A**) Chromatogram of the preparative HPLC of total anthocyanins (535 nm) and other polyphenols (280 nm) run on the Phenomenex® 5 µm Gemini® C18 column using a Varian ProStar 210 preparative HPLC.

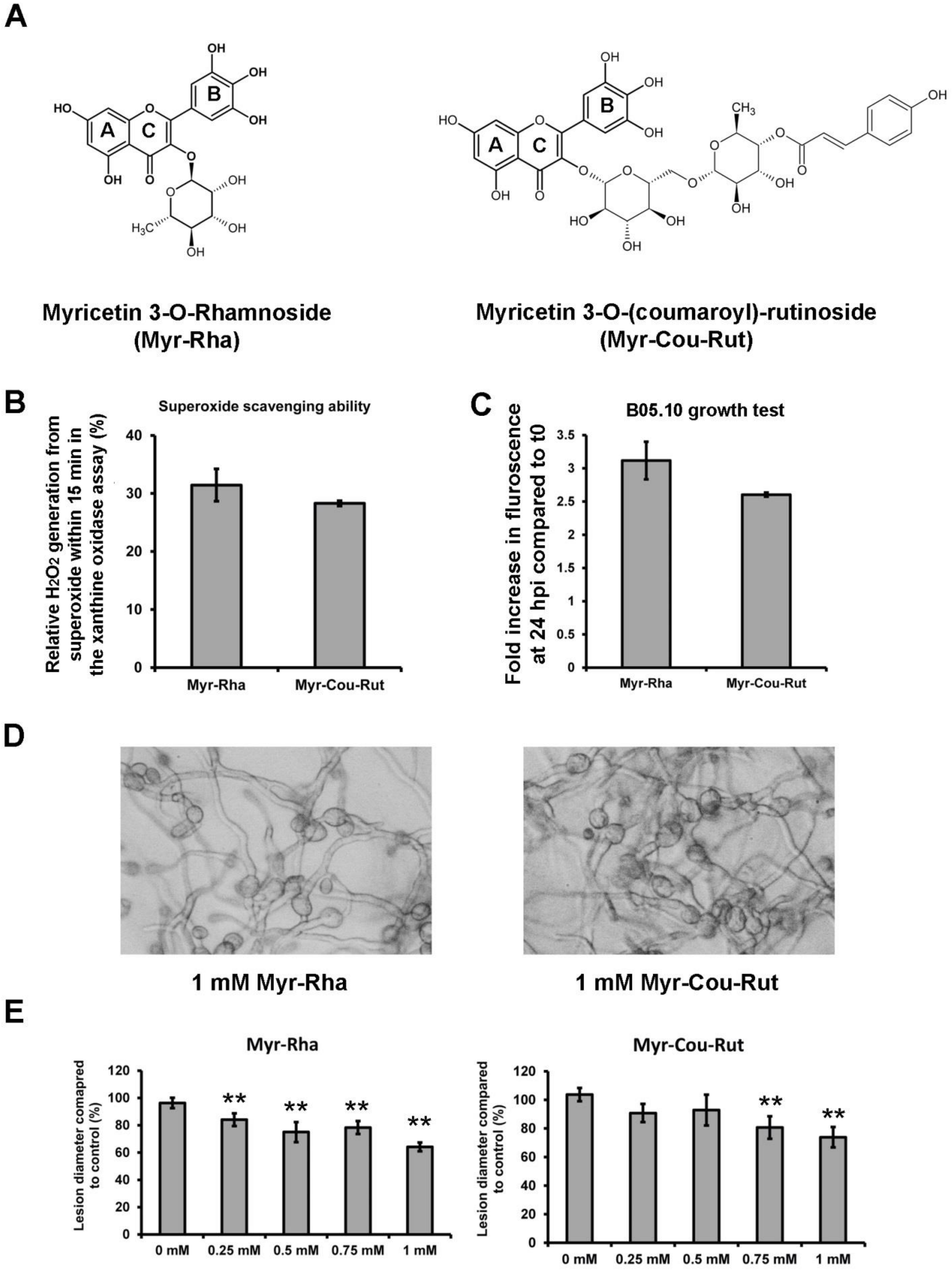
(**B**) Chromatogram of the preparative HPLC of a single anthocyanin fraction previously separated in (A) and corresponding to delphinidin 3-(coumaroyl)-rutinoside-5-glucoside with a mass of 919 run on the Waters 5 µm XBridge™ C18 prep column using a Waters Prep 2000 HPLC system.



Supplemental Figure 10. Effects of flavonoid derivatives added to the culture medium on the growth of *B. cinerea*. 1 mM of different compounds was added to the standard ¼ strength PDB medium containing 5×10^4 spores/mL *B. cinerea* GFP-labeled spores. 64 mg/L Triadiminol was added as a negative control. The fluorescence of each inoculation was measured at t0 and 24 hpi and the ratio (24 hpi v.s. t0) was calculated. Error bars show SEM (n=4). ** (p<0.01) indicates significant difference compared to inoculation only with PDB.



Supplemental Figure 11. Effects of flavonoid derivatives added to the culture medium on the germination of *B. cinerea*. 1 mM of different compounds was added to the standard ¼ strength PDB medium containing spores (5×10^4 spores/mL) of *B. cinerea*. Pictures were taken at 16 hpi.



A
Myricetin 3-O-Rhamnoside
(Myr-Rha)
Myricetin 3-O-(coumaroyl)-rutinoside
(Myr-Cou-Rut)
B
Superoxide scavenging ability
Relative H_2O_2 generation from superoxide within 15 min in the xanthine oxidase assay (%)
Myr-Rha
Myr-Cou-Rut
C
B05.10 growth test
Fold increase in fluroscence at 24 hpi compared to t0
Myr-Rha
Myr-Cou-Rut
D
1 mM Myr-Rha
1 mM Myr-Cou-Rut
E
Myr-Rha
Lesion diameter comapred to control (%)
0 mM
0.25 mM
0.5 mM
0.75 mM
1 mM
Myr-Cou-Rut
Lesion diameter compared to control (%)
0 mM
0.25 mM
0.5 mM
0.75 mM
1 mM

Supplemental Figure 12. The structure of B-ring is an important factor determining the scavenging ability of different flavonoids.

(A) Structures of purchased myricetin 3-O-rhammanoside (Myr-Rha) and myricetin 3-O-(coumaroyl)-rutinoside (Myr-Cou-Rut) purified from tomato fruit.

(B) No significant difference was observed in the scavenging ability between Myr-Rha and Myr-Cou-Rut. Error bars show SEM (n=4). The data for Myr-Cou-Rut are drawn from the data shown in **Figure 8D**.

(C) Both Myr-Rha and Myr-Cou-Rut showed no direct inhibition effect on *B. cinerea* growth *in vitro*. Error bars show SEM (n=4). The data for Myr-Cou-Rut are drawn from the data shown in **Figure 8C**.

(D) Both Myr-Rha and Myr-Cou-Rut showed no direct inhibition on *B. cinerea* germination *in vitro*. The data for Myr-Cou-Rut are drawn from the data shown in **Supplemental Figure 9**.

(E) Both Myr-Rha and Myr-Cou-Rut supplements to inocula can significantly reduce pathogen susceptibility on WT tomato fruit. ** indicates significant difference between the tested concentration and the PDB control ($p<0.01$) in Student's T-test. The data for Myr-Cou-Rut are drawn from the data shown in **Figure 8B.**

Table S1. Levels of major phenylpropanoids in WT, *AtMYB12*, *Del/Ros1* and Indigo (*AtMYB12* x *Del/Ros1*) MicroTom tomato fruit. Values are means ±SEM of determinations on two samples.

Compounds (mg/g FW)	WT	*AtMYB12*	*Del/Ros1*	Indigo
Chlorogenic Acid	0.014 ± 0.002	0.047 ± 0.016	0.007 ± 0.004	0.04 ± 0.005
Kaempferol-3-Rutinoside	0.040 ± 0.001	2.860 ± 0.384	0.052 ± 0.002	0.718 ± 0.026
Rutin	0.047 ± 0.000	1.471 ± 0.124	0.152 ± 0.042	0.312 ± 0.007
Delphinidin-(Coumaroy)-Rutinoside-Glucoside	-	-	1.034 ± 0.299	2.107 ± 0.378
Petunidin-(Coumaroyl)-Rutinoside-Glucoside	-	-	1.188 ± 0.308	2.568 ± 0.458

Table S2. Primers used in this research

Gene	ID	Primer Name	Purpose	Seq
B. cinerea cutinase A	Z69264	BcCutA-g-F	qPCR	ATTCCACAATATGGCATGAAATC
		BcCutA-g-R		ATGTTATCTCCAGCGTGACAAAT
SlACTIN	Solyc11g005330	SlACTIN-g-F	qPCR	ACAACTTTCCAACAAGGGAAGAT
		SlACTIN-g-R		TGTATGTTGCTATTCAGGCTGTG
SlANS	Solyc08g080040	SlANS-attB1	GW Cloning	GGGGACAAGTTTGTACAAAAAAGCAGGCTTAGTCCCCAACCAGAACTAG
		SlANS-attB2		GGGGACCACTTTGTACAAGAAAGCTGGGTATCTTCTCCTTTGGAGGCTC
SlDFR	Solyc02g085020	SlDFR-attB1	GW Cloning	GGGGACAAGTTTGTACAAAAAAGCAGGCTTAATTGATTTCATTAGCATC
		SlDFR-attB2		GGGGACCACTTTGTACAAGAAAGCTGGGTACTGGCCATTTCTGTCGCAC
SlF3H	Solyc02g083860	SlF3H-attB1	GW Cloning	GGGGACAAGTTTGTACAAAAAAGCAGGCTTATGGATAGGTGTAACTGAG
		SlF3H-attB2		GGGGACCACTTTGTACAAGAAAGCTGGGTAATTATCTTTAGTGGCTTG
Ubiquitin 3	Solyc01g056940	SlUBI-RT-F	RT-qPCR	GCCAAAGAAGATCAAGCACA
		SlUBI-RT-R		TCAGCATTAGGGCACTCCTT
AmDelila	M84913	AmDel-RT-F	RT-qPCR	AGATTACTTGAGAGGGCTTGAGAGG
		AmDel-RT-R		TGGCATCGTGTAGTTTAGTTTTTGT
AmRosea1	DQ275529	AmRos1-RT-F	RT-qPCR	TGGTCGCTGATTGCTGGTAG
		AmRos1-RT-R		ATCGTTCTCCATCCTCGCCTA
SlPAL	Solyc00g282510	SlPAL-qRT-F	RT-qPCR	AATTGCTTCGAGTCGTGGATAG
		SlPAL-qRT-R		ACAAGGACTTGTCTCAGCTTCTG
SlCHS1	Solyc09g091510	SlCHS1-RT-F	RT-qPCR	CCTTTATTTGAACTCGTCTCAGC
		SlCHS1-RT-R		CAGGAACATCCTTGAGTAAGTGG
SlCHI	Solyc05g010320	SlCHI-qRT-F	RT-qPCR	TTGTCAACTCGGTCTAATGTGTC
		SlCHI-qRT-R		TAAAGTGGGACCTTATTGCACAC
SlF3H	Solyc02g083860	SlF3H-RT-F	RT-qPCR	ATGGATGAGCCGATTACATTTG
		SlF3H-RT-R		TGGCCTCTTCAGTTTGTATCTTC
SlF3'5'H	Solyc11g066580	SlF3'5'H-RT-F	RT-qPCR	CTCAACGCCACTAAATCTCCCTA
		SlF3'5'H-RT-R		TTGCCCATATGTTGACACTAAGC
SlFLS	Solyc11g013110	SlFLS-RT-F	RT-qPCR	TGTCCCATATCACCCTTCTTGTC
		SlFLS-RT-R		TCACCAATGTGGACAATTATAGCA
SlDFR	Solyc02g085020	SlDFR-qRT-F	RT-qPCR	GACTTGCCGACAGAAGCAAT
		SlDFR-qRT-R		GTGCATTCTCCTTGCCACTT

SlANS	Solyc08g080040	SlANS-qRT-F	RT-qPCR	ACGAACAGGATTTTGCTGCT
		SlANS-qRT-R		TTTGAGCTCAGCAACTGCAT
Chitinase	Solyc02g082920	SlChitinase-qRT-F	RT-qPCR	GAGGACCTATCCAATTGACACACC
		SlChitinase-qRT-R		CGCAACTAAATCAGGGTTGTTCAC
β -1,3-glucanase	Solyc01g060020	SlGLU-qRT-F	RT-qPCR	GGATCGCGTCAATATAGGAACTT
		SlGLU-qRT-R		TTCCTACAGATCCTCCTCCTGTT
Metacaspase 7	Solyc09g098150	SlMCA7-qRT-F	RT-qPCR	AGGAGGTTTATGCCGGTTCAGG
		SlMCA7-qRT-R		TTGGTCTGTTTGGCACCCACTG
Pathogenesis-related protein 1	Solyc09g007010	SlPR1-qRT-F	RT-qPCR	ATACTCAAGTAGTCTGGCGCAAC
		SlPR1-qRT-R		CAGTTGCCTACAGGATCGTAGTT
Hypersensitivity-related gene 203	Solyc02g069800	SlHSR203-qRT-F	RT-qPCR	TTCAGTAGACCGGACATGGACTGG
		SlHSR203-qRT-R		AAGTCGTCATGCGGTGGAACAG