

Supplementary Material

Supplementary Figures and Tables



Supplementary figure S1: Quantification method for *Botrytis cinerea* infection and verification of pathogenicity in *Fragaria vesca* leaves. (a) Representative *F. vesca* 'Hawaii-4' leaves showing infection by *B. cinerea* 5 days after drop inoculation of fungal spores (right) or mock suspension (left). (b) Genomic DNA-based qPCR quantification of *B. cinerea* DNA relative to *F. vesca* DNA using genome-specific primers for *B. cinerea* (Bc3F and Bc3R) and *F. vesca* (EF1 α F and EF1 α R) in non-infected (Mock) and infected (*B. cinerea*) leaf samples. Y-axis values represents relative amount of *B. cinerea* DNA to *F. vesca* DNA. '*n*' = number of replicates (i.e. individual plants). Error bars show standard error (±1 SE). P-values report comparisons between infected and uninfected plants using Student's t-test.



Supplementary figure S2: Effects of BABA soil drench on resistance of *Fragaria ananassa* to infection with *Botrytis cinerea*. Plants were soil drenched with water or 0.2 mM BABA 8 days prior to drop-inoculation of leaves with *B. cinerea* (No BABA and Infected (NBI) and BABA and Infected (BI), respectively). Measurement of lesion area (in cm^2) was done using ImageJ of images taken 5, 8, and 10 days after inoculation. Values show average lesion area on infected detached leaves from 16 individual plants (n = 16). Error bars show standard error (±1 SE). P-values report significant comparisons between control plants (NBI) and plants treated with BABA (BI) using Student's t-test.



Supplementary figure S3: Direct effects of BABA on *Botrytis cinerea* growth. Growth of *B. cinerea* (brown mycelium) on potato dextrose agar amended with 0 mM, 0.3 mM, and 3 mM β -aminobutyric acid (BABA). A spore suspension of *B. cinerea* was spread on the agar and the plates were incubated in darkness for 4 weeks at room temperature.



Supplementary figure S4: Effect of BABA on relative growth rate (RGR) of *Fragaria vesca* 'Hawaii-4' plants. RGR of plants that were (a) soil-drenched with 0.2 mM or (b) spray-treated with 0.3 mM β -aminobutyric acid (BABA). Control plants were treated with a suspension without BABA. All plants were subsequently infected with *Botrytis cinerea* spores or mock-infected. '*n*' = number of replicates (i.e. individual plants). Error bars show standard error (±1 SE). P-values report comparisons between treatment combinations using Student's t-test. '*ns*' = not statistically significant.



Supplementary figure S5. Visualization of DEGs in the phenylpropanoid pathway in *Fragaria vesca* leaves after β -aminobutyric acid (BABA) treatment and *Botrytis cinerea* infection. Differentially expressed genes (DEGs) were displayed onto metabolic pathways using the MAPMAN software. (A) *B. cinerea*-infected vs. mock-infected plants (No BABA and infected (NBI) vs. No BABA and non-infected (NBNI)). (B) BABA-treated and *B. cinerea*-infected plants vs. mock-infected plants (BABA and infected (BI) vs. NBNI). Blue cells: upregulation compared to NBNI; red cells: downregulation compared to NBNI.



Supplementary figure S6. Visualization of DEGs in the terpenoid biosynthesis pathway in *Fragaria vesca* leaves after β-aminobutyric acid (BABA) treatment and *Botrytis cinerea*

infection. Differentially expressed genes (DEGs) were displayed onto metabolic pathways using the MAPMAN software. (A) *B. cinerea*-infected vs. mock-infected plants (No BABA and infected (NBI) vs. No BABA and non-infected (NBNI)). (B) BABA-treated and *B. cinerea*-infected plants vs. mock-infected plants (BABA and infected (BI) vs. NBNI). Blue cells: upregulation compared to NBNI; red cells: downregulation compared to NBNI.



Supplementary figure S7. Visualization of enriched DEGs in photosynthesis in *Fragaria vesca* leaves after β -aminobutyric acid (BABA) treatment and *Botrytis cinerea* infection. Differentially expressed genes (DEGs) were displayed onto metabolic pathways using the MAPMAN software. (A) *B. cinerea*-infected vs. mock-infected plants (No BABA and infected (NBI) vs. No BABA and non-infected (NBNI)). (B) BABA-treated and *B. cinerea*-infected plants vs. mock-infected plants (BABA and infected (BI) vs. NBNI). Blue cells: upregulation compared to NBNI; red cells: downregulation compared to NBNI.



Supplementary figure S8. Volcano plot (adjusted p-values versus log2 fold-change based on edgeR data) of transcripts in leaves of *Fragaria vesca* Hawaii-4 plants following BABA treatment and infection with *Botrytis cinerea*. Plants were treated with different combinations of 0.2 mM β -aminobutyric acid (BABA) as a soil drench and spray-inoculation of leaves with *B. cinerea* two days later. Transcripts with p-values < 0.05 are shown in red. (A) *Botrytis cinerea*-infected plants (No BABA and infected; NBI) vs. mock-infected plants (No BABA and non-infected; NBNI). (B) BABA-treated and mock-infected plants (BABA and non-infected; BNI) vs. NBNI. (C) BABA-treated and infected plants (BABA and infected; BI) vs. NBNI. (D) BNI vs. NBI. (E) BI vs. NBI. (F) BI vs. BNI.



Supplementary figure S9. KEGG pathway analysis. Sequence data from the different treatments were assigned KO-numbers and mapped onto the MAPK signaling pathway - plant - Reference pathway (left) and the Plant-pathogen interaction - Reference pathway (right) to highlight similarities and differences between upregulated genes for the NBI vs NBNI (green) and the BI vs NBNI treatments.

Sl N o	Primer Name	Primer Sequence (5'-3')	Gene IDs	Purpose
1	FvEF1aRTw F	GCCCATGGTTGTTGAAACTTT	FvH4_7g2005	
2	FvEF1aRTR	GGCGCATGTCCCTCACA	0	
3	FvPR1.1- RTF	CGGCGACTTATCAGGCACA	FvH4_2g0292	
4	FvPR1.1- RTR	CCACAAACCCTGCCAGAAGC	0	
5	FvPR5.3F	ACCTCCTAATGACACTCCCGAAACA	FvH4_6g1695 0	
6	FvPR5.3R	CGTAGTTAGGTCCACCGAAGCATGT A		
7	FvPR4-RTF	GCAGGACAACAACTGGGATTTG	FvH4_3g2601	
8	FvPR4-RTR	GTCACTAGCAGACATTTTCCACAGG	0	
9	FvBG2-1RTF	CCATATTGCTGCTCCTTGTTCTG	EvU4 2~2927	qPCR
10	FvBG2- 1RTR	CCTTCCAATTCCATTGCTTTTGTAC	FVH4_3g2837 0	
11	FvBG2-3RTF	CCCTAATAAACAGCCAAAGTATCAG C	FvH4 4g1950	
12	FvBG2- 3RTR	CGTATCACTCTTGAGAGAAGTGG	0	
13	FvPGIP1- RTF	CCTAGTTCATACGGGAAATTCGTTG	FvH4 6g2279	
14	FvPGIP1- RTR	TTCATGTTAGCAAATGAGGTTGGG	0	
15	FvLr10-JRTF	AACTCCTGCAGAGTATGCCAACTG	FvH4_4g2692	
16	FvLr10-RTR	GCGTTGCATGTGACCTCAAAC	0	

Supplementary Table S6: List of *Fragaria vesca* and *Botrytis cinerea* primers used in this study.

17	FvWRKY75- JRTF	CCCAGAAGCTACTATCGATGCAC	FvH4_6g5377
18	FvWRKY75- RTR	AGGCTTGTCGATTGGATGAGAGTG	0
19	FvCPK1- JRTF	TATGTCACCCTTGGGTTCAGGTTG	FvH4_6g2084
20	FvCPK1- JRTR	GTGTTCAGCAATGACTCTAAGAGCC	0
21	FvPecLy1- JRTF	GACATGAGTATCCGCAACAGCAC	FvH4_4g0576
22	FvPecLy1- RTR	CACAACGCCAGCAATCATCAATG	0
23	FvSLP3- JRTF	CTAGTGAATCAGTCACGTCCTATGC	FvH4_4g0737
24	FvSLP3- JRTR	TTTCTGCCTGCTCGTGAGAAATG	0
25	FvARR3- JRTF	GAATCTCCTCTTGCAAAGTGACCG	FvH4_4g3523
26	FvARR3- JRTR	CCATCAAAACCAACTGAGGTGCTC	0
27	FvPHOT2- JRTF	GAAACTGTCGGTTTCTTCAGGGAC	FvH4_2g1722
28	FvPHOT2- JRTR	GTGAGAAGATTCCAGAAAGGAGTG C	0
29	FvDSLPR- JRTF	GGCGGAGGATTTTAGTGACACATTG	FvH4_2g2029
30	FvDSLPR- JRTR	CTATGCTTGCCTTGTGCTTGAGA	0
31	FvPAL2-RTF	GAGGGCAGAGCTAGTAGAACATG	
32	FvPAL2- RTR	TTAGGCAAGACACTCTTCAGTTCC	FvH4_7g1913 0
33	Fv4CL7-RTF	CAAAGACGACGTCGTCCTTATCC	FvH4_6g1646 0
34	Fv4CL7-RTR	GATGACGAGCTTAGGGTTACAGTC	
35	FvGDS-RTF	AATGGTTGTAGTTAACGAGCCTGC	

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36	FvGDS-RTR	GCAGTAGTGTAAAGGTCACCATCC	FvH4_4g2794 0	
37	FvBAS-RTF	AGCACAAACAACTTCGTCGGAAG	FvH4 2g0804	
38	FvBAS-RTR	GAACTGAAGACGAGCCTCTTCAAC	0	
39	FvSCMT- RTF	GAGAACCAGAGAGCTGTGATTTCG	FvH4_3g0313	
40	FvSCMT- RTR	TTCAGACACTCTGGGAAGAGAGTG	0	
41	Fv12OR2- RTF	GCATGGAAACCCATTGTCAATGC	FvH4_5g3263	
42	Fv12OR2- RTR	TCGGTACAAGAAATTGGAGCCTG	0	
43	FvACCOX1- RTF	GAGGTTCCAACCAACTATGACAGG	FvH4_5g1929	
44	FvACCOX1- RTR	CAGTTACTCCAGCATCAACAAGACC	0	
45	FvECDS- RTF	TTCTTCCCTCAATCTGCAATGCG	FvH4_2g2344	
46	FvECDS- RTR	TCCTTGGTAGGAAGAGCCTCTTC	0	
47	FvRe1 RTF	TGAATATGAAGAGGCTTGCAAAGACTC		
48	FvRe1 RTR	TCTTCTCCATCCTAATCCCATTCTCTG		
49	Bc3F	GCTGTAATTTCAATGTGCAGAATCC	(Diguta et al., 2010)	
50	Bc3R	GGAGCAACAATTAATCGCATTTC	For <i>B. cinerea</i> quantification	