

Supplementary Material

Acibenzolar-S-methyl reprograms apple transcriptome towards resistance to rosy apple aphid

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1 Supplementary Data

Supplementary Material should be uploaded separately on submission. Please include any supplementary data, figures and/or tables. All supplementary files are deposited to FigShare for permanent storage and receive a DOI.

Supplementary material is not typeset so please ensure that all information is clearly presented, the appropriate caption is included in the file and not in the manuscript, and that the style conforms to the rest of the article.

2 Supplementary Figures and Tables

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2.1 Supplementary Figures



Supplementary Figure 1 Phylogenetic analysis of *MdAGGs* CDS

Supplementary Figure 2 Identity matrices of apple agglutinins (promoter, CDS and protein)

Supplementary Figure 3 *MdAGG* protein sequence alignment

Supplementary Table 1 Statistical values related to Table 1, Figures 2, 3 and 7.

Supplementary Table 2 Direct effect of ASM application on *Dysaphis plantaginea* mortality

Supplementary Table 3 Selected genes from microarray data set

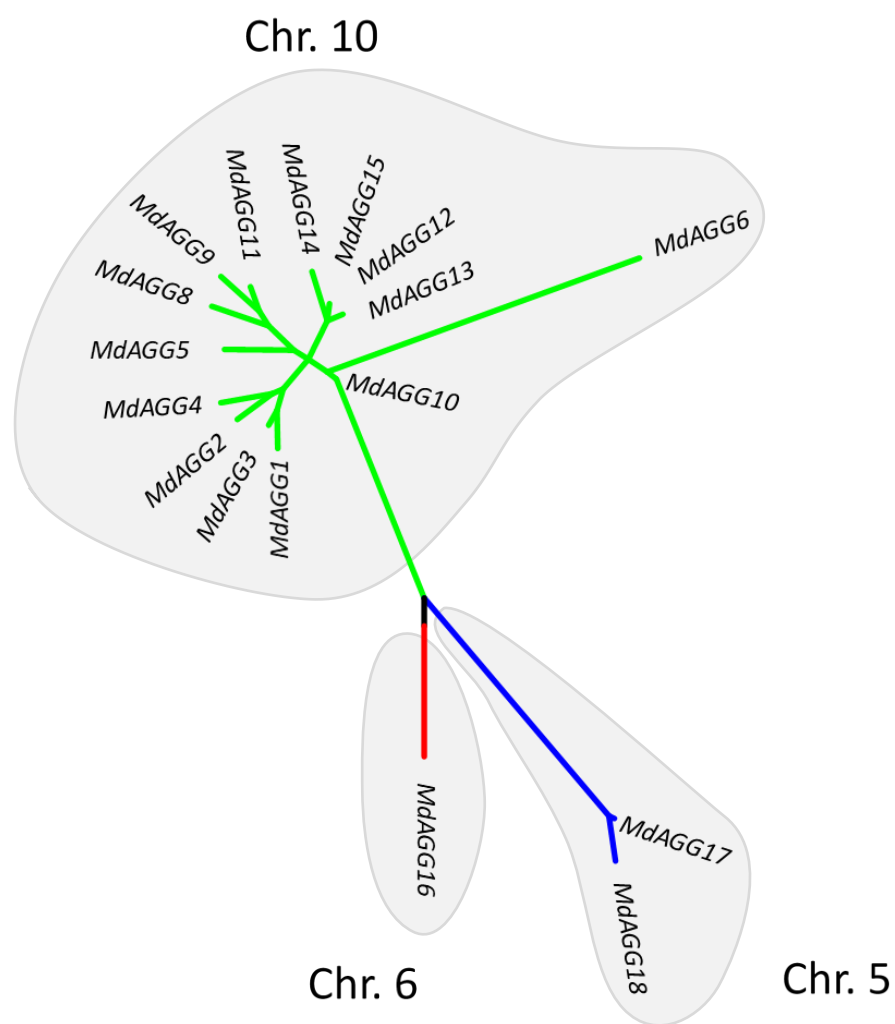
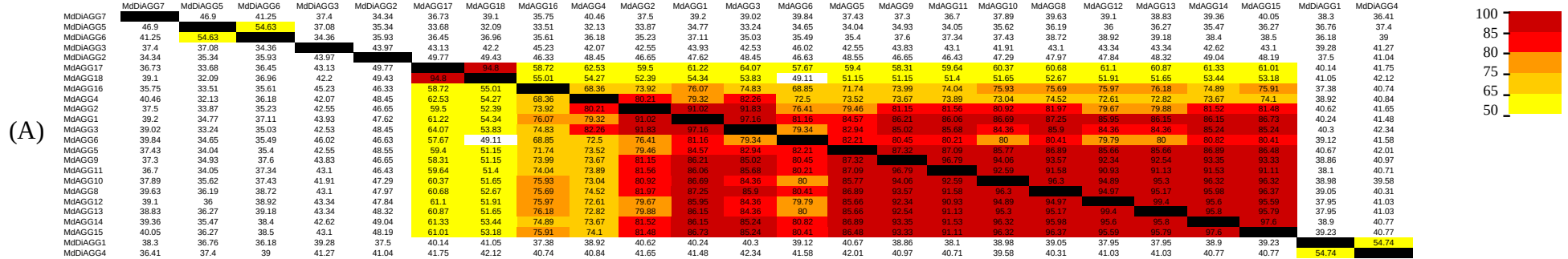
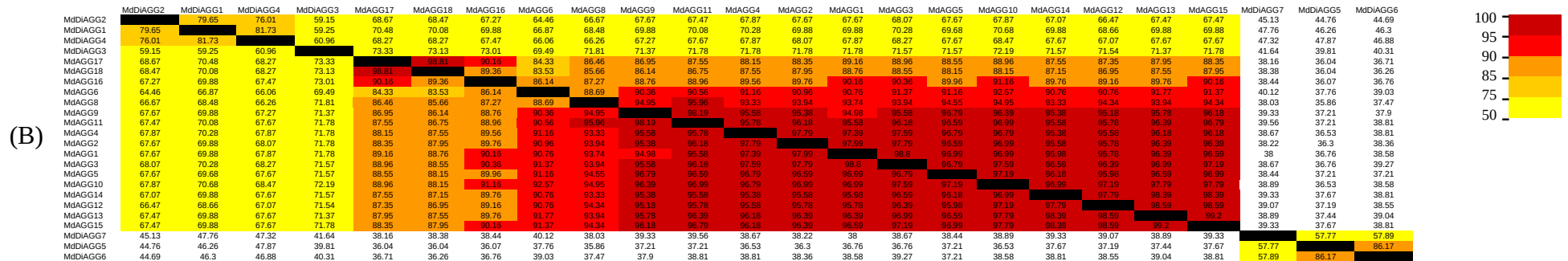


Figure S1 Phylogenetic analysis of *MdAGG*s CDS using the maximum likelihood method. The tree was built with MEGA7. Branches are colored according to the chromosome harboring the considered CDS.

Pairwise identity (%)



Pairwise identity (%)



Pairwise identity (%)

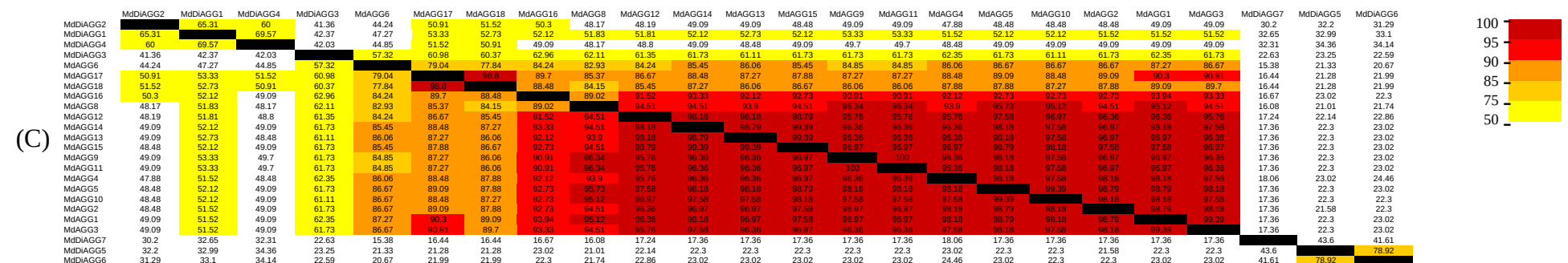


Figure S3 (previous page) Muscle protein sequence alignment of apple and *A. caudatus* (AcaAGG) mono-agglutinins. Conserved residues are in yellow. Beta-sheets of 1jlx are indicated in blue. Residues involved in the interaction between AcaAGG and ligand are in red, bold and underlined; those involved in the predicted interaction between MdAGGs and Gal-GalNAc are in bold. Residues from the synthetic peptide are indicated in green when identical and in red when different. Portions of MdDiAGGs are aligned to this sequence in order to visualize sequence identities (indicated on the right-hand side) using the same color code.

Table S1 Statistical values for the analysis of plant choice tests (related to Table 1), fundatrigeniae life traits (related to figure 2), EPG analysis (related to Figure 3) and olfactometer experiments on gynoparae (related to Figure 7).

Plant Choice Tests (Mann and Withney)		
Morph	W-value	P-value
Fundatrigenia	25	0.01167
Gynoparae	16	0.02652
Fecundity per surviving adult fundatrigenia (Generalized linear mixed models, Poisson)		
Factor	χ^2	p-value
Treatment	103.81	< 2.2e-16
Time	430.217	< 2.2e-16
Intersection	44.861	1.46e-7
Survival analysis (Cox regression survival analysis)		
Experiment	Z-value	p-value
Adult longevity	-2.296	0.0217
Larval development (adults)	5.541	3.01e-8
Larval development (mortality)	-10.8	< 2.2e-16
Olfactometer experiment (paired t-test)		
Farnesene dose	T-value	p-value
10 ng	0.993	0.328
100 ng	-1.64	0.111
1 µg	-4.146	0.00026
10 µg	-3.544	0.001
100 µg	-0.881	0.385
Olfactometer experiment (paired t-test)		
Caryophyllene dose	T-value	p-value
10 ng	-1.199	0.239
100 ng	0.069	0.946
1 µg	-1.159	0.255
10 µg	-0.991	0.322
Olfactometer experiment (paired t-test)		
Blend Farnese Caryophyllene	T-value	p-value
03:01	-0.905	0.372
Control	T-value	p-value
Two-control	-0.727	0.473
EPG analysis (Mann and Withney)		
Item	W-value	p-value
#T	443	0.0102
#np	265	0.3799
#C	380.5	0.1756
#E1	479.5	0.0010
#E2	549	0.0000

Td np	183	0.0125
Td C	277	0.5240
Td E1	270	0.4361
Td E2	494.5	0.0003
Ad np	192	0.0207
Ad C	216	0.0670
Ad E1	155	0.0025
Ad E2	453.5	0.0048
T> 1st E1	201	0.0339
T > 1st E2	83	0.0000
D 1st E1	317	0.9070
D 1st E2	457.5	0.0037
T > 1st C	348	0.4748
D 1st C	319	0.8774
1 st E1<T> 1st E2	108.5	0.0001
# np > 1st E1	233	0.1326
Td np > 1st E1	204	0.0383
# C > 1st E1	237	0.1538
Td C > 1st E1	172	0.0065

Table S2 Direct effect of ASM application on *Dysaphis plantaginea* fundatrigeniae mortality. Method as described in Robert *et al.*, 2016 with ASM (a.i. of Bion® 50 WG) at 0.2 g l⁻¹.

Observations (3 days after spraying)	control	ASM
Total no.aphids	100	100
% living aphids	84	91
% dead aphids	12	4
% missing aphids	4	5
χ^2 /d.f./p-value	4.39/2/0.11	