

**Supplemental material for:**

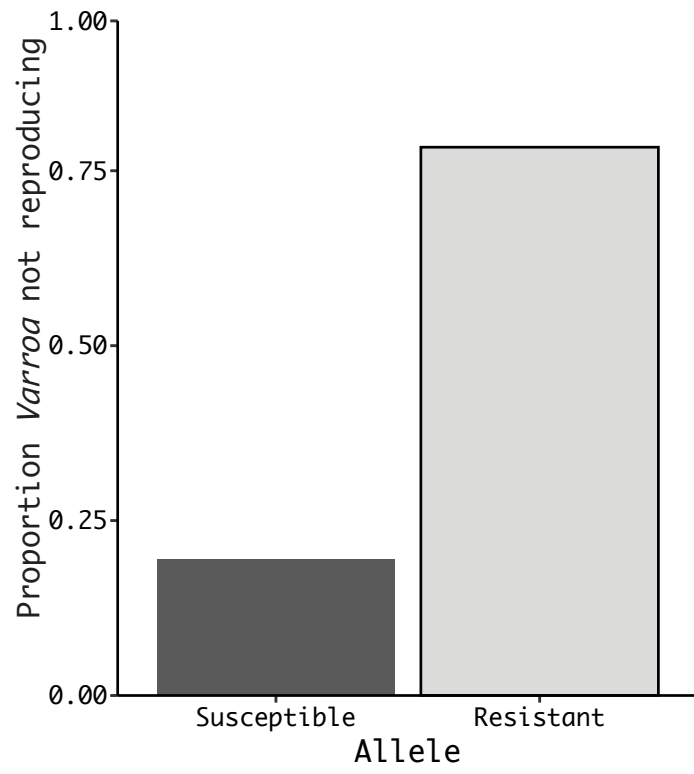
**A gene for resistance to the Varroa mite (Acari) in honey bee (*Apis mellifera*) pupae**

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Supplementary Figure 1



The proportion of reproducing and non-reproducing *Varroa* for resistant and susceptible alleles at the  $F_{ST}$  peak.

Chromosome	Position (Mbp)	Resistant Allele	Susceptible Allele	Gene	Amino Acid Change
15	7.422888	G	C	<i>GB50180</i>	Gly -> Ala
15	7.422989	C	T	<i>GB50180</i>	His -> Tyr
15	7.427533	C	T	<i>GB50181</i>	Leu -> Phe
15	7.427599	T	C	<i>GB50181</i>	Ala -> Pro
15	7.427876	G	A	<i>GB50181</i>	Glu -> Lys
15	7.429057	A	T	<i>GB50049</i>	Val -> Asp
15	7.454459	A	G	<i>Mblk-1</i>	Asn -> Thr
15	7.454648	T	C	<i>Mblk-1</i>	Gln -> Arg
15	7.464915	A	G	<i>Mblk-1</i>	Leu -> Pro

Supplementary Table 1.

All SNPs from the  $F_{ST}$  window causing changes in the amino acid sequence with their genomic position, bases, gene name and amino acid change. The 2.2 cM gap between the best segregating SNPs (in the gene *Mblk-1*) and all other SNPs is shown with a black line.

GLM results

GLM		<i>Phantom</i>				
		Df	Sum Squares	Mean Squares	F value	Pr(>F)
Caste		1	16.7	16.7	12.2	<0.001 ***
Time		5	60.1	12.0	8.8	<0.001 ***
Residuals		52	71.1	1.4		

GLM		<i>Cyp18A1</i>				
		Df	Sum Squares	Mean Squares	F value	Pr(>F)
Caste		1	3732.4	3732.4	580.8	<0.001 ***
Time		5	3900.9	782.0	121.4	<0.001 ***
Caste:Time		5	3919.8	784.0	122.0	<0.001 ***
Residuals		47	302.1	6.4		

GLM		<i>Mblk-1</i>				
		Df	Sum Squares	Mean Squares	F value	Pr(>F)
Caste		1	16.7	16.7	18.2	<0.001 ***
Time		5	60.1	12.0	13.1	<0.001 ***
Caste:Time		5	28.0	5.6	6.1	<0.001 ***
Residuals		47	43.1	0.9		

Tukey's post-hoc test results

Gene	Time	<i>Mblk-1</i>											
		d0	w0	d8	w8	d12	w12	d16	w16	d24	w24	d30	w30
<i>Cyp18a1</i>	d0		0.995	0.957	0.652	0.114	0.814	<0.001	0.955	0.010	0.641	1.000	0.999
	w0	<0.001		0.386	0.108	<0.001	0.193	<0.001	0.381	<0.001	0.119	0.891	0.751
	d8	1.000	<0.001		0.999	0.321	1.000	<0.001	1.000	0.310	1.000	0.999	1.000
	w8	<0.001	<0.001	<0.001		0.738	1.000	<0.001	1.000	0.726	1.000	0.935	0.985
	d12	1.000	<0.001	1.000	<0.001		0.562	0.029	0.324	1.000	0.869	0.052	0.102
	w12	0.006	<0.001	0.008	<0.001	0.013		<0.001	1.000	0.550	1.000	0.984	0.998
	d16	1.000	<0.001	1.000	<0.001	1.000	0.016		<0.001	0.031	<0.001	<0.001	<0.001
	w16	<0.001	<0.001	<0.001	<0.001	<0.001	0.991	<0.001		0.315	1.000	0.999	1.000
	d24	1.000	<0.001	1.000	<0.001	1.000	0.007	1.000	<0.001		0.861	0.505	0.980
	w24	<0.001	<0.001	<0.001	0.002	<0.001	0.957	<0.001	1.000	<0.001		0.920	0.978
	d30	1.000	<0.001	1.000	<0.001	1.000	0.002	1.000	<0.001	1.000	<0.001		1.000
	w30	0.893	<0.001	0.916	<0.001	0.961	0.335	0.973	0.025	0.904	0.018	0.712	

Supplementary Table 2.

The results of the General Linear Models, for the differential expression of genes *Mblk-1*, *Cyp18a1* and *Phantom*, with Tukey's post-hoc tests, for *Mblk-1* and *Cyp18a1*, between worker and drone pupae at each time point from the qPCR experiment. Significant ( $p < 0.05$ ) contrasts in the Tukey's tests are highlighted in green.