

Table S1. Locus (common) names, Gene identification numbers, gene category (development, immune, house keeping), primers sequences and references (when selected from the literature) for genes tested via real time PCR.

Locus	Gene ID	Category	Forward Primer	Reverse Primer	Reference
VGMC(vitellogenin)	UGID:1213462	Development	AGTTCCGACCGACGACGA	TTCCCTCCCACGGAGTCC	Boncristiani et al., 2012
actin	GB17681	House keeping	TTGTATGCCAACACTGTCCTTT	TGGCGCGATGATCTTAATT	Boncristiani et al., 2012
RPS5	GB11132	House keeping	AATTATTTGGTCGCTGGAATTG	TAACGTCCAGCAGAATGTGGTA	Evans et al., 2006
abaecin	GB18323	Immune	CAGCATTCCCATACGTACCA	GACCAGGAAACGTGGAAAC	Evans et al., 2006
defensin2	GB10036	Immune	GCAACTACCGCCTTACGTC	GGGTAACGTGCGACGTTTA	Evans et al., 2006
defensin1	GB19392	Immune	GGATGAATTGAGGCCACTTG	ATGACCTCCAGCTTACCCA	-
hymenopt	GB17538	Immune	CTCTTCTGTGCCGTTGCATA	GCGTCTCCTGTCATTCCATT	Evans et al., 2006
PPOact	GB18767	Immune	ATCCAACAGAGTGGCCTTGG	GAAATCGTATTGCGCGAGC	-
relish	GB13742	Immune	AGCAGTGTGAAGGAGCTGA	AAGCGTCCATAATCACACCA	-
Bact16S (774/1391)	M60313	Pathogen	GTAGTCCACGCTGTAAACGATG	GACGGGCGGTGTGTRCA	Simone et al., 2009
BQCV	HQ655494.1	Pathogen	TTTAGAGCGAATTCGGAAACA	GGCGTACCGATAAAGATGGA	Boncristiani et al., 2012
DWV	AY292384.1	Pathogen	GAGATTGAAGCGCATGAACA	TGAATTCACTGTCGCCATA	Boncristiani et al., 2012
IAPVF1aR1	EF219380.1	Pathogen	GCGGAGAATATAAGGCTCAG	CTTGCAAGATAAGAAAGGGGG	Boncristiani et al., 2012

Table S2. Average levels (\pm s.e.) of natural occurring pathogens (virus and *Nosema*) and parasites (*Varroa* mite) between years for September and May. Gene expression analysis of DWV and BQCV was performed using ANOVA, using R version 2.15, with colony as a random factor and year as a fixed effect. Colony-level measurements (*Varroa* and *Nosema* levels) were compared between years using two tailed t-tests and non-parametric Wilcoxon rank-sum test, as appropriate, using R version 2.15.

	September		Statistical analysis
	2012	2013	
<i>Varroa</i> mite (<i>Varroa</i> mites/100 bees)	4.96 \pm 1.48	9.91 \pm 2.96	Z = 2.22 P = 0.03
DWV (relative expression)	- 11.93 \pm 0.35	- 8.09 \pm 0.54	F _{1,25} = 9.12 P = 0.006

	May		Statistical analysis
	2013	2014	
<i>Varroa</i> mite (<i>Varroa</i> mites/100 bees)	0.79 \pm 0.92	2.57 \pm 2.20	Z = 2.02 P = 0.04
<i>Nosema</i> (10 ⁵) (<i>Nosema</i> spp. spores/100 bees)	3 \pm 0.55	6.1 \pm 1.62	Z = 2.52 P = 0.02
BQCV (relative expression)	- 6.96 \pm 0.16	- 5.68 \pm 0.13	F _{1,23} = 8.25 P = 0.009