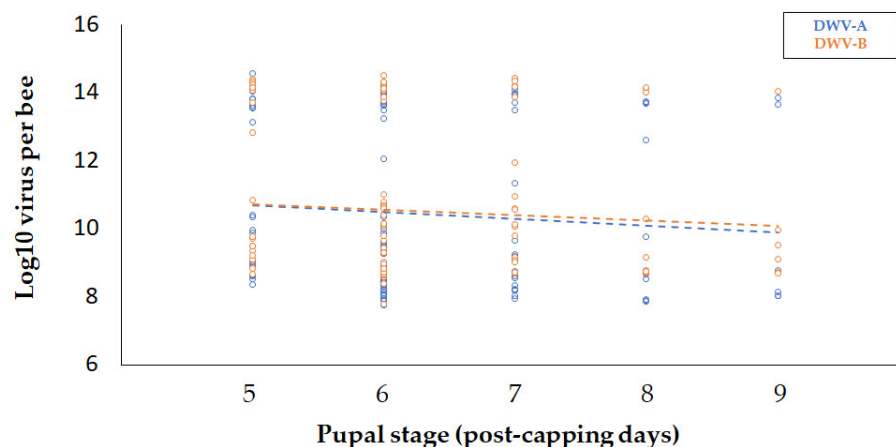




## Article

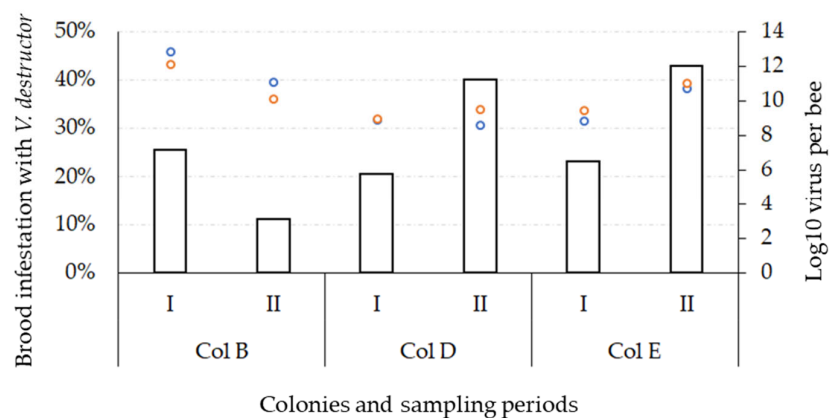
**Intra-colonial viral infections in Western honey bees (*Apis mellifera*)**

Loreley Castelli<sup>1</sup> +, María Laura Genchi García<sup>2,3,4</sup> +, Anne Dalmon<sup>5</sup>, Daniela Arredondo<sup>1</sup>, Karina Antunez<sup>1</sup>, Ciro Invernizzi<sup>6</sup>, Francisco José Reynaldi<sup>4,7</sup>, Yves Le Conte<sup>5</sup>, Alexis Beaurepaire<sup>5,8</sup> \*

**Supplementary Material**

**Figure S1 - Comparison of virus levels across brood stages**

DWV strain titers of individual pupae across different brood stages are shown. The dotted lines represent regression lines. The statistical tests were non-significant for the two strains (linear regressions,  $p > 0.05$ ).



**Figure S2 - Viral loads and mite infestation levels**

Graph representing the *V. destructor* brood infestation levels at the time of sampling (columns) and the mean log10 of DWV-A (blue dots) and DWV-B (orange dots) virus genome copies (right axis).

**Table S1 - Standard Gene Information**

Standard genes were synthesized by Eurofins Genomics, Vector Backbone pEX-A128, Antibiotic Selection: Ampicillin, Cloning via Type IIS restriction enzymes.

Virus (size)	Sequence
DWV-A (156nt)	TACTAGTGCTGGTTTTTCCTTTGTCTTCATTAAAGCCACCTGGAACATCAGGTAA GCGATGGTTGTTTGATATTGAGCTACAAGACTCGGGATGTTATCTTTGCGAG GAATGCGTCCCGAACTCGAGATTCAATTATCAACGACACAGTTAATGAG
DWV-B (156nt)	TACTAGTGCTGGTTTTTCCTTTATCTTCATTAAAACCGCCAGGCTCTTCTGGTAA GCGATGGTTGTTTGATATTGAATTACAAGATTCAGGATGTTATCTTTGAGAG GGATGAGACCTGAACCTGAGATACAGTTGACAACAACCTCAGTTAATGAG
BQCV (294nt)	AGTGGCGGAGATGTATGCGCTTATCGAGGAGGAGTTCGAGTTAAAGTTGTT ACTGAGAAGGGTGTGGATTTCGTCAGAGCTACCGTTAGTCCTCAACAGACTT ACGGCAGTGATGTCGCTCCTACTACTCATATCAGTACTCCTTTGGCAATAGAA CAAATACCTATAAAGGGAGTCGCAGAGTTCCAAATACCGTACTATGCTCCAT GTTTGTTCATCTTCGTTTAGAGCGAATTCGGAAACATTTTACTATAGTTCAGGTC GGAATAATCTCGATATAGCCACTTCACCTCC
ABPV (197nt)	TCATACCTGCCGATCAAGAAACAAATACTTCCAACGTACATAATACGCAACT CGCGTCGACCTCTGAAGAAAACCTCAGTTGAAACGGAACAAATCACCACCTTT CATGATGTGGAAACTCCAAATAGGATCAATACCCCCATGGCTCAAGACACTT CATCGGCTCGGAGCATGGATGATACGCACAGTATTATTCAG
SBV (335nt)	TTGGAACACGCATTCTCTGACGAGCATGTACAAGTTCAGATGGATGATAGTG TAGAAAGAGTTTATGATGAAGGGAACCAAGTCTATTACTATCCGCCCCCTAA ACCAGAGGGTTTTAGTTTGAACAATGTACGGACTTCGGTTAGTACGTTGTGTA ATATGCTTGGAAGTAGTAACCTCCTGAGAGAGCAATGAAAACAGCGCTGTG TGCAACTCCTTATTTTGGATCAGCTTATATGACAGCTACTACCCTAGACGCTA TAGGTAGTATGCAGAATACCGTTACGGGAGCTGCACACCAGTTGACTGCATC TGTTGATGCGAGGTTAGAGC



**Table S2 - Result of statistical tests comparing the levels of DWV across patriline**

N: number of patriline that were included in the analysis (sample size  $\geq 6$  per patriline), Test: test used for the comparison (KW: Kruskal Wallis when  $>2$  groups compared, if significant, Dunn test corrected with Bonferroni to compare patriline pairwise; W: Wilcoxon–Mann–Whitney tests to compare two groups). All groups compared are composed by at least 6 samples.

Group	N (Test)	DWV-A	DWV-B																		
Col B (I)	3 (KW)	d = 2.6169, df = 3, p = 0.45	d = 0.1709, df = 3, p= 0.98																		
Col D (II)	3 (KW)	d = 7.7302, p = <b>0.02</b>	d = 8.5439, p = <b>0.01</b>																		
		<table><tr><td></td><td>G</td><td>J</td></tr><tr><td>J</td><td>1.812 p = 0.105</td><td>-</td></tr><tr><td>K</td><td>2.732 p = <b>0.009*</b></td><td>0.920 p = 0.537</td></tr></table>		G	J	J	1.812 p = 0.105	-	K	2.732 p = <b>0.009*</b>	0.920 p = 0.537	<table><tr><td></td><td>G</td><td>J</td></tr><tr><td>J</td><td>-2.678 p = <b>0.011*</b></td><td>-</td></tr><tr><td>K</td><td>-0.325 p = 1.000</td><td>2.353 p = 0.0279</td></tr></table>		G	J	J	-2.678 p = <b>0.011*</b>	-	K	-0.325 p = 1.000	2.353 p = 0.0279
			G	J																	
		J	1.812 p = 0.105	-																	
K	2.732 p = <b>0.009*</b>	0.920 p = 0.537																			
	G	J																			
J	-2.678 p = <b>0.011*</b>	-																			
K	-0.325 p = 1.000	2.353 p = 0.0279																			
Col E (I)	2 (W)	W = 48, p = <b>0.002388</b>	W = 48, p = <b>0.002388</b>																		
Col E (II)	2 (W)	W = 22, p = 0.8518	W = 43, p = <b>0.0168</b>																		

**Table S3 - Results of the Wilcoxon–Mann–Whitney tests to compare cells with reproducing and non-reproducing mites**

Only groups with sample sizes  $\geq 6$  samples were compared.

Colony	DWV-A	DWV-B
B	$W = 109, p = 0.3565$	$W = 120, p = 0.6001$
D	$W = 74.5, p = 0.2186$	$W = 81.5, p = 0.08741$