

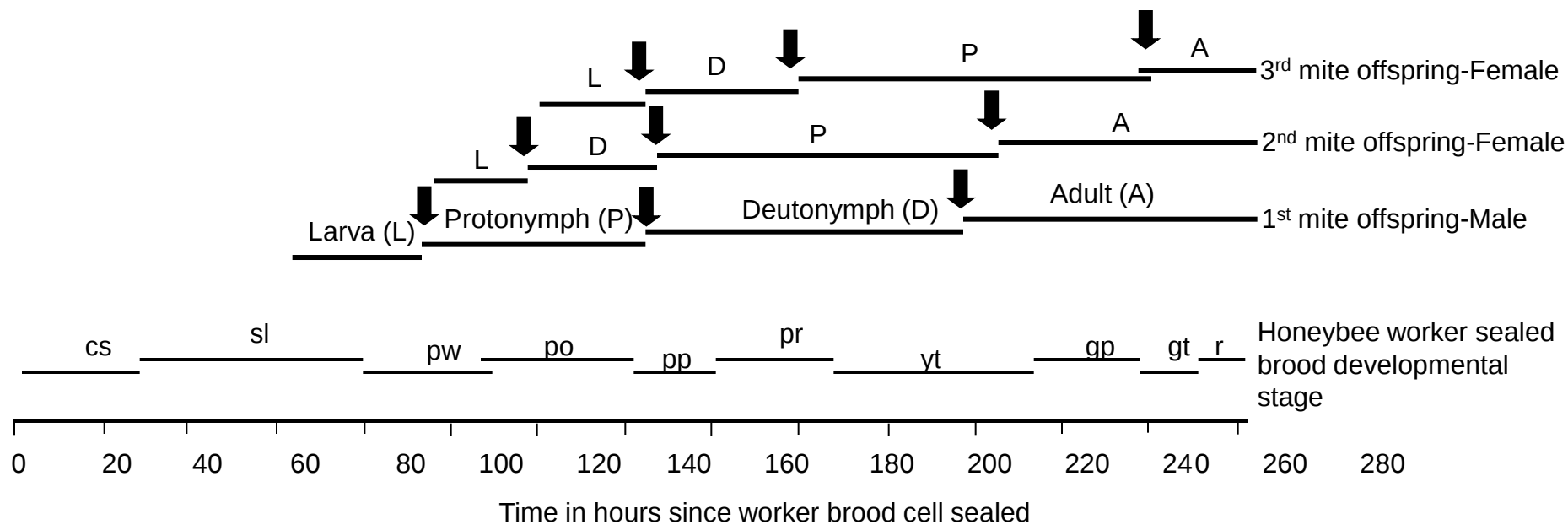
Oldest *Varroa* tolerant honey bee population provides insight into the origins of the global decline of honey bees

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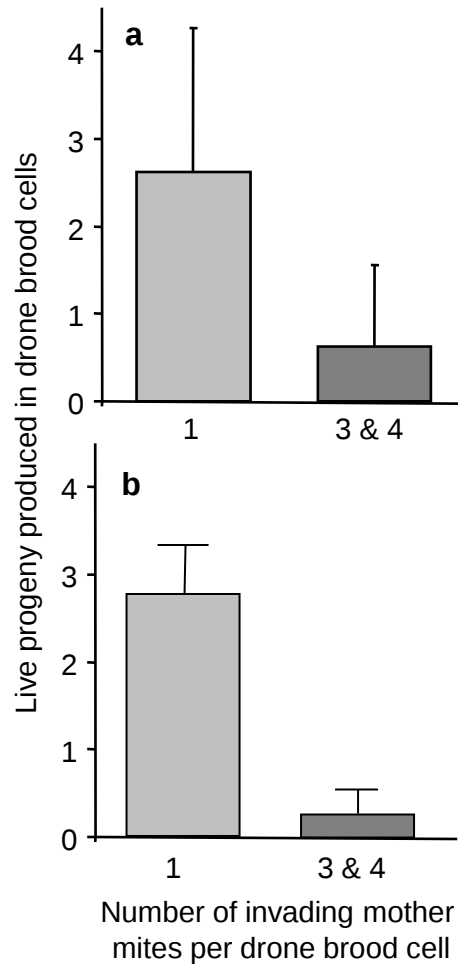
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Supplementary Information



Supplementary Figure 1. The development and timing of Varroa in relation to the development and timing of the honey bee inside the sealed brood cell adapted from Martin [27]. Honey bee development stages: cs=cocoon spinning, sl=stretched larva, pw=pupa with white eyes, po=pale eyes, pp=pink eyes, pr=purple eyes, yt=yellow thorax, gp=grey wing pads, gt=grey thorax, r=resting adult.



Supplementary Figure 2. Comparison of the number of live progeny produced in drone brood per invading mother in a) this study and b) a previous study [26], calculated using the method used in [26]. This indicates the importance of using the same method when comparing mite reproductive data across studies.

collection	sample	Ct (DWV)	Ct (actin)
Jul-15	R1_c10	neg	19.48
Jul-15	R1_D1	neg	13.71
Jul-15	R1_B1	neg	18.12
Jul-15	R1_B2	neg	16.82
Jul-15	R1_L2	34.43	16.49
Jul-15	R1_c13	35.24	16.43
Jul-15	R1_B3	34.11	17.34
Jul-15	R1_c1	33.29	16.61
Jul-15	R1_B4	31.3	17.11
Jul-15	R1_c9	neg	15.35
Jul-15	R1_B5	neg	18.01
May-16	R2_c6	neg	17.87
May-16	R2_C7	neg	18.48
May-16	R2_c13	34.42	17.67
May-16	R2_c10	35.76	18.12
May-16	R2_c9	34.12	18.44
May-16	R2_c11	34.4	19.22
May-16	<i>Varroa</i> 1	33.83	25.38
May-16	<i>Varroa</i> 2	36.55	23.04
	positive control	17.59	19.32

Supplementary Table S1. Presents the mean DWV and actin Ct values for each colony tested as well as the two pooled *Varroa* samples and a positive control of an asymptomatic newly emerged worker bee which had been parasitised by *Varroa* during development.

	Worker sealed brood				Drone sealed brood			
Category*	This study	EHB †	African [53]	AHB [52]	This study	EHB †	African [53]	<i>A.cerana</i> [54]
Dead Mothers (all)	11%	2	6	2	18%	5	6	
Non-reproductive >po	19%	10	13	12	10%	3	2	0-2
Viable mothers >po	70%				65%			
Only males >po	6%	9	15	11	20%	14	20	0-2
Viable offspring (>gp) Live male + female	40%	63	51	43	53%	63	59	94-99
Mean # of eggs laid	4.9	4.9	4.5	4.38	5.3	5.5	4.9	
No of viable females per mother >gp	0.54	0.9	0.9	0.6-0.7	1.6	1.9-2.1	2.2	4.6
No of viable females from multiple infested cells	0.39	1.0			1.0	1.6		

Supplementary Table S2. Presents the various reproductive categories for the J type mites in this study compared to other studies using a similar methodology. po=pale eyed pupa and gp=grey wing pads, referring to host honey bee life stages. *Percentages will not add up to 100 since they are considering different sub-sets of data for each calculation. †=recalculated from [27,49].