

SUPPLEMENTARY MATERIAL

Aphids and ants, mutualistic species, share a *mariner* element with an unusual location on aphid chromosomes

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Supplementary Table 1. Oligonucleotides used for *mariner* PCR amplifications.

mariner family	Oligonucleotide	Sequence (5' - 3')
<i>Myrmar</i>	Mrug-MAR	CCAGGTCTGTAAATATGAAACCGGAAT
<i>Mboumar</i>	ITR-MAR	CCAGGTGTGTCGGTAATTCCTTTCCGG
<i>Sinvmar</i>	Sinv-mar-1	TTAGGTGTTAAACTTAATTCCTGCCGCT
	Sinv-mar-2	AATTGAAGGTAACCTTAATTCCTGCCGTT
<i>Azteca</i>	Azteca-1	CGAGGTTTGTTAAAAAAAAGGTGA
	Azteca-2	CGAGGTGTGATCAAAAAGTAAGGTGA
	Azteca-3	CGAGGTTTGTTAAAAAAAAAAAAAGTGA
	Azteca-4	CGAGGTGTGTTCAAAAAAAGGTGA

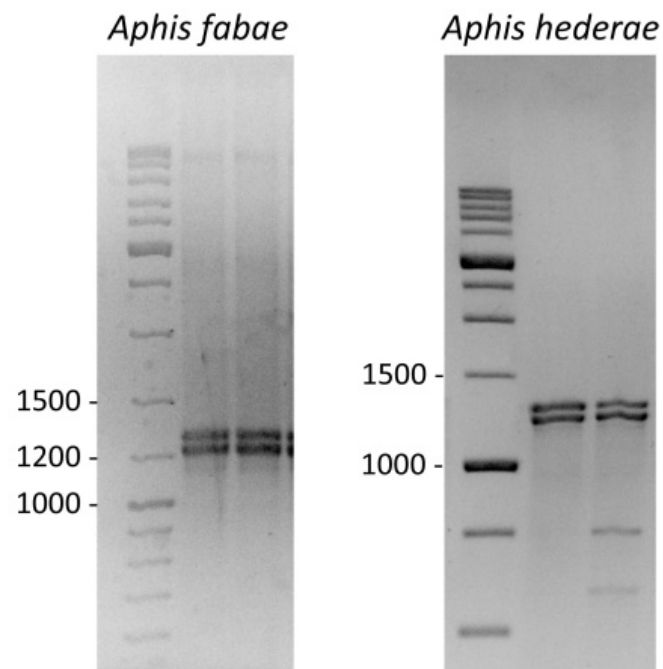


Figure S1. Agarose gel showing the PCR amplification of genomic DNA from *A. fabae* and *A. hederae* using primers based in the ITRs from *Myrmar* elements. The numbers indicate the size of DNA fragments in bp.

	210	220	230	240	250	260	270	280	290	300
AfabmarMr-50	ATTTGCGGACAGCCCTACTTTTCTGTTTTCATCTGAAGAAAACCGCAGCGGAATCGCATCGAATGCTTCCGGAGGCATTTGGTGAGCATGCTCTCGGTAA									
AfabmarMr-54	T	.....	.....	.....
AfabmarMr-57	T	.....	.....	.....
AfabmarMr-13	T	.....	.....	.....
AfabmarMr-25	G	.....	T	.....	.....	.....
AfabmarMr-51	T	G	.....	.....
AfabmarMr-55	T	.....	.....	.....
AfabmarMr-58	T	.....	C	.....
AfabmarMr-26	G	.....	.....	.....	T	.....	.....	.....
AfabmarMr-27	T	.....	.....	.....
AfabmarMr-65	T	.....	.....	G	.....	T	.....	.....	.....
AfabmarMr-76	T	.....	.....	G	.....	T	.....	G	.....
AfabmarMr-10	T	.....	.....	G	.....	T	.....	.....	.....
AfabmarMr-96	T	.....	.....	G	.....	T	.....	.....	.....
AfabmarMr-59	T	.....	.....	G	.....	T	.....	.....	.....
AfabmarMr-94	T	.....	.....	G	.....	T	.....	.....	.....
AfabmarMr-12	T	.....	.....	G	.....	T	.....	.....	.....
AfabmarMr-63	T	.....	.....	G	G	T	.....	.....	.....
AfabmarMr-144	T	.....	.....	G	.....	T	.....	.....	.....
AhedmarMr-700	T	.....	C	.....
AhedmarMr-707	T	.....	.....	T	.....	C	.....
AhedmarMr-712	T	.....	C	.....
AhedmarMr-713	T	.....	C	.....
AhedmarMr-9	T	.....	G	G	.....	T	G	.....	C
AhedmarMr-33	T	.....	G	G	.....	T	.....	.....	.....
AhedmarMr-51	T	.....	G	G	.....	T	.....	.....	.....
AhedmarMr-61	T	.....	G	G	.....	T	.....	.....	.....
AhedmarMr-74	T	.....	G	G	.....	T	.....	.....	.....
AhedmarMr-77	T	.....	G	G	.....	T	.....	.....	.....
AhedmarMr-293	T	.....	G	G	.....	T	.....	.....	.....
AhedmarMr-301	T	.....	G	G	.....	T	.....	.....	.....
AhedmarMr-544	T	.....	G	G	.....	T	.....	.....	.....
AhedmarMr-808	T	.....	G	G	.....	T	.....	.....	.....
AhedmarMr-815	T	.....	G	G	.....	T	.....	.....	.....
	310	320	330	340	350	360	370	380	390	400
AfabmarMr-50	AACACAGTGTTCGAGTGGTTTGAACGATTCAAAAGTGGCGATTTTGACGTGAGGAACGAAGAACGTGGTAGACCACCGAAAAAGTTTGAAGACGCTGAC									
AfabmarMr-54
AfabmarMr-57	G	.....
AfabmarMr-13	T	.....	.....
AfabmarMr-25
AfabmarMr-51
AfabmarMr-55
AfabmarMr-58
AfabmarMr-26	C	.....	.....	.....	.....	.....	.....
AfabmarMr-27
AfabmarMr-65	A	G	.....	.....	.....	G	.....	.....
AfabmarMr-76	A	G	.....	.....	.....	G	.....	.....
AfabmarMr-10	A	G	.....	.....	.....	G	.....	.....
AfabmarMr-96	A	G	.....	.....	.....	G	.....	.....
AfabmarMr-59	A	G	.....	T	.....	G	.....	.....
AfabmarMr-94	A	G	.....	.....	.....	G	.....	.....
AfabmarMr-12	A	G	.....	.....	.....	G	.....	.....
AfabmarMr-63	A	G	.....	.....	.....	G	.....	.....
AfabmarMr-144	A	G	.....	.....	.....	G	.....	.....
AhedmarMr-700	G	.....	.....
AhedmarMr-707
AhedmarMr-712
AhedmarMr-713
AhedmarMr-9	A	G	.....	.....	.....	G	.....	.....
AhedmarMr-33	A	G	.....	.....	.....	G	.....	.....
AhedmarMr-51	A	G	.....	.....	.....	G	.....	.....
AhedmarMr-61	A	G	.....	.....	.....	G	.....	.....
AhedmarMr-74	A	G	.....	.....	.....	G	.....	.....
AhedmarMr-77	A	G	.....	.....	.....	G	.....	.....
AhedmarMr-293	G	.....	A	G	.....	.....	.....	G	.....	.....
AhedmarMr-301	A	G	.....	.....	.....	G	.....	.....
AhedmarMr-544	A	A	G	.....	.....	.....	G	.....	.....
AhedmarMr-808	A	G	.....	.....	.....	G	.....	.....
AhedmarMr-815	A	G	.....	.....	.....	G	.....	.....

	410	420	430	440	450	460	470	480	490	500
AfabmarMr-50	CTGCAAGCCTTGTGGACGAAGACGACGCTCGAACACAACAAC	TGGCCGGATCAGTTAAAGGTGACCCGGGAAGCCATCTCCCTTCGGTTGAAAGCCA								
AfabmarMr-54			A.	G.						
AfabmarMr-57			A.							
AfabmarMr-13			A.							
AfabmarMr-25			A.							
AfabmarMr-51			A.							
AfabmarMr-55			A.					C.		
AfabmarMr-58			A.							
AfabmarMr-26			A.							
AfabmarMr-27			A.							
AfabmarMr-65			A.	AAC.	G.				C.	
AfabmarMr-76			AG.	AAC.	G.					
AfabmarMr-10			A.	AAC.	G.			C.		
AfabmarMr-96			A.	AAC.						
AfabmarMr-59			A.	AAC.						
AfabmarMr-94			A.	AAC.						
AfabmarMr-12			A.	AAC.					C.	
AfabmarMr-63			A.	AAC.						
AfabmarMr-144			A.	AAC.						
AhedmarMr-700			A.							
AhedmarMr-707			A.							T.
AhedmarMr-712			A.							
AhedmarMr-713			A.							
AhedmarMr-9			A.	AAC.						
AhedmarMr-33			A.	AAC.						
AhedmarMr-51			A.	AAC.						
AhedmarMr-61			A.	AAC.						
AhedmarMr-74			A.	AAC.						
AhedmarMr-77			A.	AAC.						
AhedmarMr-293			A.	AAC.	G.					
AhedmarMr-301			A.	AAC.						
AhedmarMr-544			A.	AAC.						
AhedmarMr-808			A.	AAC.						
AhedmarMr-815			A.	AAC.						

	510	520	530	540	550	560	570	580	590	600
AfabmarMr-50	TGGGAAAGATACAAAAGGCGGGGAAATGGGTTCACATGAACTCAACGAAAGACAGCAGGAAACCGCAAAACATCATGCGAAATGCTGCTCGCCAGGTT									
AfabmarMr-54										
AfabmarMr-57										
AfabmarMr-13							G.			
AfabmarMr-25										
AfabmarMr-51										
AfabmarMr-55										
AfabmarMr-58										
AfabmarMr-26										
AfabmarMr-27										C.
AfabmarMr-65										
AfabmarMr-76										
AfabmarMr-10										
AfabmarMr-96										C.
AfabmarMr-59										
AfabmarMr-94										
AfabmarMr-12										
AfabmarMr-63										
AfabmarMr-144										
AhedmarMr-700						G.	C.			
AhedmarMr-707										
AhedmarMr-712										
AhedmarMr-713										
AhedmarMr-9										
AhedmarMr-33										
AhedmarMr-51										
AhedmarMr-61							T.			
AhedmarMr-74										
AhedmarMr-77						G.				
AhedmarMr-293										
AhedmarMr-301										
AhedmarMr-544										
AhedmarMr-808										
AhedmarMr-815				T.		G.				

	1010	1020	1030	1040	1050	1060	1070	1080	1090	1100
AfabmarMr-50	T	C	A	C	C	G	A	C	C	T
AfabmarMr-54	T	C	A	C	C	G	A	C	C	T
AfabmarMr-57	T	C	A	C	C	G	A	C	C	T
AfabmarMr-13	T	C	A	C	C	G	A	C	C	T
AfabmarMr-25	T	C	A	C	C	G	A	C	C	T
AfabmarMr-51	T	C	A	C	C	G	A	C	C	T
AfabmarMr-55	T	C	A	C	C	G	A	C	C	T
AfabmarMr-58	T	C	A	C	C	G	A	C	C	T
AfabmarMr-26	T	C	A	C	C	G	A	C	C	T
AfabmarMr-27	T	C	A	C	C	G	A	C	C	T
AfabmarMr-65	T	C	A	C	C	G	A	C	C	T
AfabmarMr-76	T	C	A	C	C	G	A	C	C	T
AfabmarMr-10	T	C	A	C	C	G	A	C	C	T
AfabmarMr-96	T	C	A	C	C	G	A	C	C	T
AfabmarMr-59	T	C	A	C	C	G	A	C	C	T
AfabmarMr-94	T	C	A	C	C	G	A	C	C	T
AfabmarMr-12	T	C	A	C	C	G	A	C	C	T
AfabmarMr-63	T	C	A	C	C	G	A	C	C	T
AfabmarMr-144	T	C	A	C	C	G	A	C	C	T
AhedmarMr-700	T	C	A	C	C	G	A	C	C	T
AhedmarMr-707	T	C	A	C	C	G	A	C	C	T
AhedmarMr-712	T	C	A	C	C	G	A	C	C	T
AhedmarMr-713	T	C	A	C	C	G	A	C	C	T
AhedmarMr-9	T	C	A	C	C	G	A	C	C	T
AhedmarMr-33	T	C	A	C	C	G	A	C	C	T
AhedmarMr-51	T	C	A	C	C	G	A	C	C	T
AhedmarMr-61	T	C	A	C	C	G	A	C	C	T
AhedmarMr-74	T	C	A	C	C	G	A	C	C	T
AhedmarMr-77	T	C	A	C	C	G	A	C	C	T
AhedmarMr-293	T	C	A	C	C	G	A	C	C	T
AhedmarMr-301	T	C	A	C	C	G	A	C	C	T
AhedmarMr-544	T	C	A	C	C	G	A	C	C	T
AhedmarMr-808	T	C	A	C	C	G	A	C	C	T
AhedmarMr-815	T	C	A	C	C	G	A	C	C	T

	1110	1120	1130	1140	1150	1160	1170	1180	1190	1200
AfabmarMr-50	T	C	A	C	C	G	A	C	C	T
AfabmarMr-54	T	C	A	C	C	G	A	C	C	T
AfabmarMr-57	T	C	A	C	C	G	A	C	C	T
AfabmarMr-13	T	C	A	C	C	G	A	C	C	T
AfabmarMr-25	T	C	A	C	C	G	A	C	C	T
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AfabmarMr-63	T	C	A	C	C	G	A	C	C	T
AfabmarMr-144	T	C	A	C	C	G	A	C	C	T
AhedmarMr-700	T	C	A	C	C	G	A	C	C	T
AhedmarMr-707	T	C	A	C	C	G	A	C	C	T
AhedmarMr-712	T	C	A	C	C	G	A	C	C	T
AhedmarMr-713	T	C	A	C	C	G	A	C	C	T
AhedmarMr-9	T	C	A	C	C	G	A	C	C	T
AhedmarMr-33	T	C	A	C	C	G	A	C	C	T
AhedmarMr-51	T	C	A	C	C	G	A	C	C	T
AhedmarMr-61	T	C	A	C	C	G	A	C	C	T
AhedmarMr-74	T	C	A	C	C	G	A	C	C	T
AhedmarMr-77	T	C	A	C	C	G	A	C	C	T
AhedmarMr-293	T	C	A	C	C	G	A	C	C	T
AhedmarMr-301	T	C	A	C	C	G	A	C	C	T
AhedmarMr-544	T	C	A	C	C	G	A	C	C	T
AhedmarMr-808	T	C	A	C	C	G	A	C	C	T
AhedmarMr-815	T	C	A	C	C	G	A	C	C	T

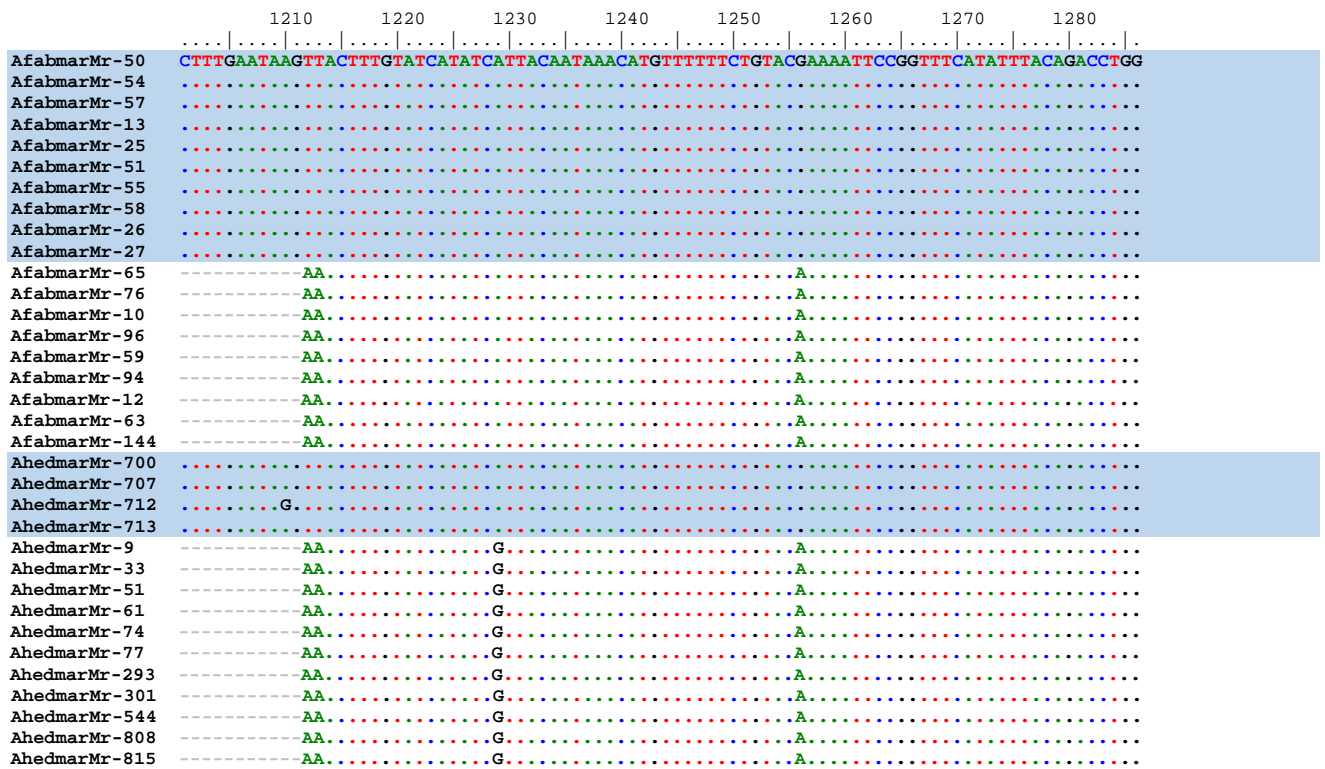


Figure S2. Sequence alignment of all *Afabmar-Mr* and *Ahedmar-Mr* *rmariner* sequences. Full-length copies of *mariners* in both species are marked with blue shading.

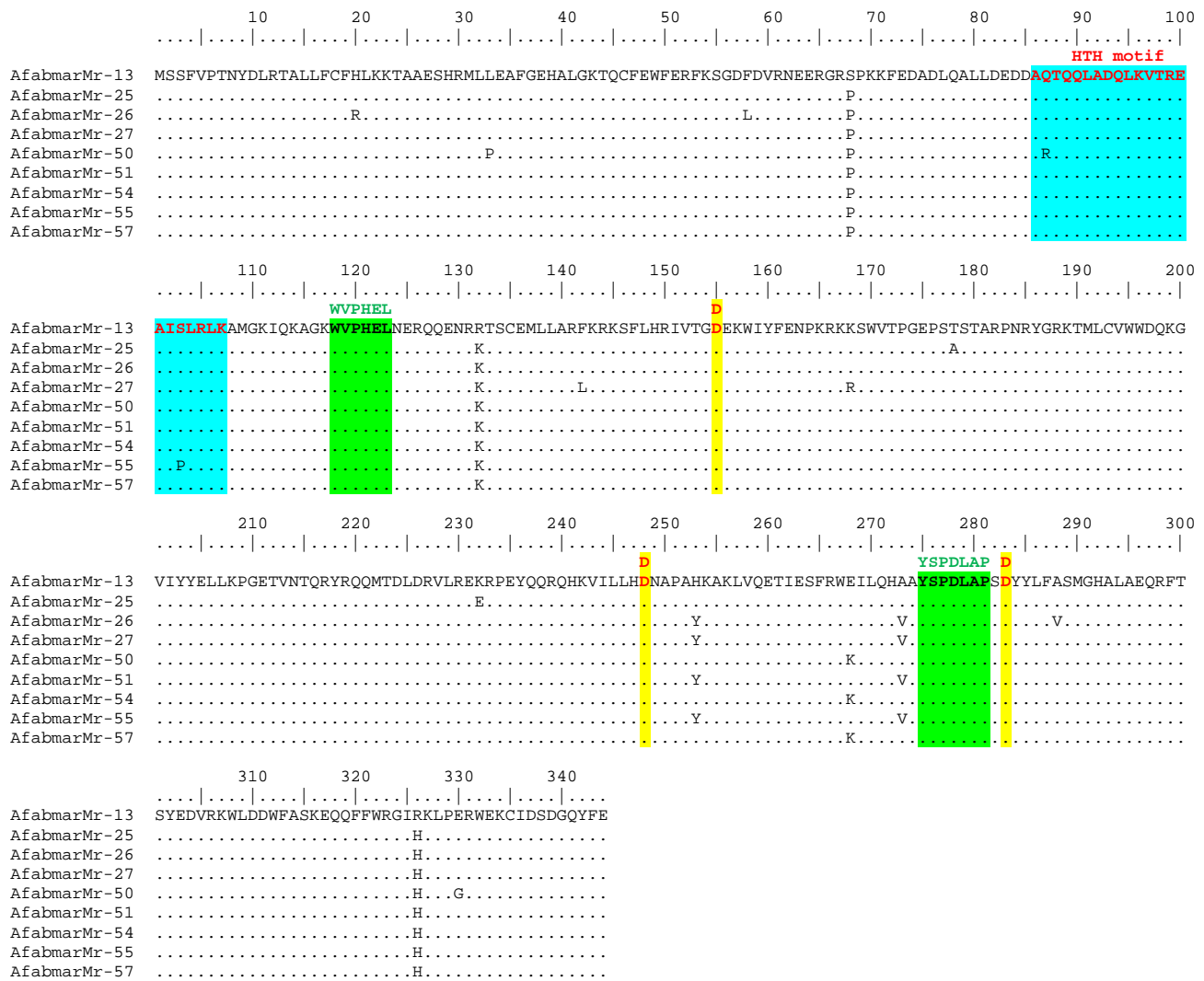


Figure S3. Sequence alignment of all putative *Afabmar-Mr* transposases. The conserved D,D(34)D motif, the also conserved *mariner* transposase WVPHEL and YSPDL motifs and the HTH motif are shown in different colors (yellow, green and blue respectively).

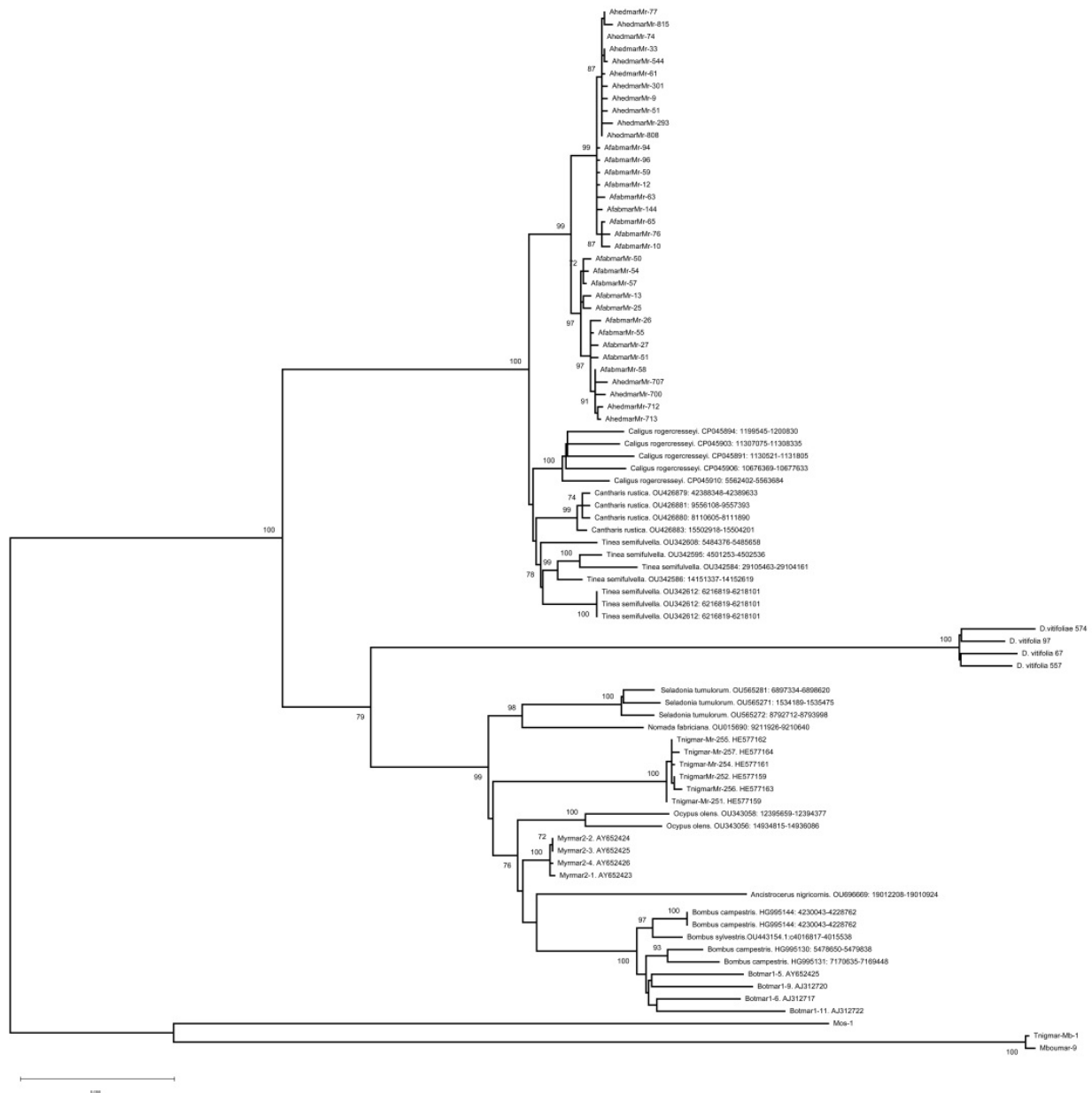


Figure S4. Maximum-likelihood analysis of the nucleotide *Myrmar* like *mariner* sequences. The accession numbers and nucleotide position of each *mariner* element are indicated. The data corresponding to the sequences of *Daktulosphaira vitifoliae* are shown in Figure S5. Numbers indicate the bootstrap values over 1000 replications. Only bootstrap support values greater than 70% are showed.

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>scaffold557 Apollo scaffold557:100292..101408 (+ strand) length=1117
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>scaffold97 Apollo scaffold97:110013..111289 (- strand) class=match length=1277
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Figure S5. Sequences found in the *Daktulosphaira vitifoliae* genome with similarity with the *Myrmar* elements. These sequences were obtained from the AphidBase web server (<https://bipaa.genouest.org/is/aphidbase/>).