

**Table S1. Polymerase Chain Reaction (PCR) primers and amplification parameters for the molecular identification of tick species and tick-borne pathogens**

| Gene Name                                      | Primer Name | Sequence (5'-3')              | Length (bp) | Amplification Parameters  |
|--|-------------|-------------------------------|-------------|---|
| <i>16S rDNA</i>                                | 16S+1       | CTGCTCAATGATTTTTTAAATTGCTGTGG | 460         | one cycle of 94 °C for 5 min, followed by 35 cycles of 94 °C for 30 s, 52 °C for 30 s and 72 °C for 30 s, with a final extension at 72 °C for 5 min.            |
|  | 16S-1       | CCGGTCTGAACTCAGATCAAGT        |             |   |
| <i>COXI</i>                                    | LCO1490     | GGTCAACAAATCATAAAGATATTGG     | 710         | one cycle of 94 °C for 5 min, followed by 35 cycles of 94 °C for 30 s, 48 °C for 30 s and 72 °C for 60 s, with a final extension at 72 °C for 5 min.            |
|  | HC02198     | TAAACTTCAGGGTGACCAAAAAATCA    |             |   |
| <i>ITS-2</i>                                   | 3SA         | CTAAGCGGTGGATCACTCGG          | 1145        | one cycle of 94 °C for 5 min, followed by 35 cycles of 94 °C for 30 s, 55 °C for 30 s and 72 °C for 70 s, with a final extension at 72 °C for 5 min.            |
|  | JB9A        | GCACTATCAAGCAACACGACT         |             |   |
| <i>Rickettsia gltA</i> gene                    | gltA-YF     | ATGACCAATGAAAATAATAAT         | 1178        | one cycle of 94 °C for 5 min, followed by 35 cycles of 94 °C for 30 s, 50 °C for 30 s and 72 °C for 60 s, with a final extension at 72 °C for 5 min.            |
|  | gltA-YR     | ATTGCAAAAAGTACAGTGAACA        |             |   |
| <i>Babesia and Theileria 18S rDNA</i> gene     | RIB-19      | CGGGATCCAACCTGGTTGATCCTGC     | 1700        | <b>a.</b> one cycle of 94 °C for 5 min, followed by 35 cycles of 94 °C for 30 s, 54 °C for 30 s and 72 °C for 120 s, with a final extension at 72 °C for 5 min. |
|  | RIB-20      | CCGAATTCCTTGTTACGACTTCTC      |             |   |
| Nest PCR                                       | BAB-rumF    | ACCTCACCAGGTCCAGACAG          | 430         | <b>b.</b> one cycle of 94 °C for 5 min, followed by 35 cycles of 94 °C for 30 s, 54 °C for 30 s and 72 °C for 30 s, with a final extension at 72 °C for 5 min.  |
|  | BAB-rumR    | GTACAAAGGGCAGGGACGTA          |             |   |
| <i>Anaplasma phagocytophilum 16S rDNA</i> gene | ge3a        | CACATGCAAGTCGAACGGATTATTC     | 932         | <b>a.</b> one cycle of 94 °C for 5 min, followed by 35 cycles of 94 °C for 30 s, 55 °C for 30 s and 72 °C for 60 s, with a final extension at 72 °C for 5 min.  |
|  | ge10r       | TTCCGTTAAGAAGGATCTAATCTCC     |             |   |
|  | ge9f        | AACGGATTATTCTTTATAGCTTGCT     | 546         | <b>b.</b> one cycle of 94 °C for 5 min, followed by 35 cycles of 94 °C for 30 s, 55 °C for 30 s and 72 °C for 60 s, with a final extension at 72 °C for 5 min.  |
| Nest PCR                                       | ge2         | GGCAGTATTAAAAGCAGCTCCAGG      |             |   |
| <i>Borrelia burgdorferi</i> <i>OspA</i> gene   | OspA-N1     | GAGCTTAAAGGAACTTCTGATAA       | 518         | <b>a.</b> one cycle of 94 °C for 5 min, followed by 35 cycles of 94 °C for 30 s, 45 °C for 30 s and 72 °C for 60 s, with a final extension at 72 °C for 5 min.  |
|  | OspA-C1     | GTATTGTTGTACTGTAATTGT         |             |   |
|  | OspA-N2     | ATGGATCTGGAGTACTTGAA          | 312         | <b>b.</b> one cycle of 94 °C for 5 min, followed by 35 cycles of 94 °C for 30 s, 45 °C for 30 s and 72 °C for 30 s, with a final extension at 72 °C for 5 min.  |
|  | OspA-C2     | CTTAAAGTAACAGTTCCTTCT         |             |   |

**Table S2. Haplotype frequencies for the *16S rDNA*, *COXI* and *ITS-2* genes within *R. microplus* populations**

| Haplotype       | Total | BH <sup>a</sup> | BS | CZ | FC | GG | GL | HC | HZ | LB | LZ | NN | QZ | WZ | YL |
|-----------------|-------|-----------------|----|----|----|----|----|----|----|----|----|----|----|----|----|
| <i>16S rDNA</i> |       |                 |    |    |    |    |    |    |    |    |    |    |    |    |    |
| S1              | 99    | 10              | 8  | 15 | 10 | 11 | 0  | 0  | 7  | 5  | 1  | 10 | 3  | 11 | 8  |
| S2              | 1     | 1               | 0  | 0  | 0  | 0  | 0  | 0  | 0  | 0  | 0  | 0  | 0  | 0  | 0  |
| S3              | 59    | 4               | 3  | 2  | 3  | 3  | 0  | 0  | 0  | 12 | 5  | 4  | 8  | 4  | 11 |
| S4              | 1     | 1               | 0  | 0  | 0  | 0  | 0  | 0  | 0  | 0  | 0  | 0  | 0  | 0  | 0  |
| S5              | 1     | 1               | 0  | 0  | 0  | 0  | 0  | 0  | 0  | 0  | 0  | 0  | 0  | 0  | 0  |
| S6              | 1     | 1               | 0  | 0  | 0  | 0  | 0  | 0  | 0  | 0  | 0  | 0  | 0  | 0  | 0  |
| S7              | 3     | 1               | 1  | 0  | 0  | 0  | 0  | 0  | 0  | 0  | 0  | 0  | 0  | 0  | 0  |
| S8              | 1     | 1               | 0  | 0  | 0  | 0  | 0  | 0  | 0  | 0  | 0  | 0  | 0  | 0  | 0  |
| S9              | 1     | 0               | 1  | 0  | 0  | 0  | 0  | 0  | 0  | 0  | 0  | 0  | 0  | 0  | 0  |
| S10             | 1     | 0               | 1  | 0  | 0  | 0  | 0  | 0  | 0  | 0  | 0  | 0  | 0  | 0  | 0  |
| S11             | 1     | 0               | 1  | 0  | 0  | 0  | 0  | 0  | 0  | 0  | 0  | 0  | 0  | 0  | 0  |
| S12             | 1     | 0               | 1  | 0  | 0  | 0  | 0  | 0  | 0  | 0  | 0  | 0  | 0  | 0  | 0  |
| S13             | 1     | 0               | 1  | 0  | 0  | 0  | 0  | 0  | 0  | 0  | 0  | 0  | 0  | 0  | 0  |
| S14             | 6     | 0               | 2  | 0  | 0  | 0  | 0  | 0  | 0  | 0  | 0  | 0  | 4  | 0  | 0  |
| S15             | 1     | 0               | 1  | 0  | 0  | 0  | 0  | 0  | 0  | 0  | 0  | 0  | 0  | 0  | 0  |
| S16             | 1     | 0               | 0  | 1  | 0  | 0  | 0  | 0  | 0  | 0  | 0  | 0  | 0  | 0  | 0  |
| S17             | 1     | 0               | 0  | 1  | 0  | 0  | 0  | 0  | 0  | 0  | 0  | 0  | 0  | 0  | 0  |
| S18             | 1     | 0               | 0  | 1  | 0  | 0  | 0  | 0  | 0  | 0  | 0  | 0  | 0  | 0  | 0  |
| S19             | 2     | 0               | 0  | 0  | 2  | 0  | 0  | 0  | 0  | 0  | 0  | 0  | 0  | 0  | 0  |
| S20             | 1     | 0               | 0  | 0  | 1  | 0  | 0  | 0  | 0  | 0  | 0  | 0  | 0  | 0  | 0  |
| S21             | 1     | 0               | 0  | 0  | 1  | 0  | 0  | 0  | 0  | 0  | 0  | 0  | 0  | 0  | 0  |
| S22             | 1     | 0               | 0  | 0  | 1  | 0  | 0  | 0  | 0  | 0  | 0  | 0  | 0  | 0  | 0  |
| S23             | 1     | 0               | 0  | 0  | 1  | 0  | 0  | 0  | 0  | 0  | 0  | 0  | 0  | 0  | 0  |
| S24             | 2     | 0               | 0  | 0  | 1  | 0  | 0  | 0  | 0  | 0  | 0  | 0  | 0  | 1  | 0  |
| S25             | 1     | 0               | 0  | 0  | 0  | 1  | 0  | 0  | 0  | 0  | 0  | 0  | 0  | 0  | 0  |
| S26             | 1     | 0               | 0  | 0  | 0  | 1  | 0  | 0  | 0  | 0  | 0  | 0  | 0  | 0  | 0  |
| S27             | 1     | 0               | 0  | 0  | 0  | 1  | 0  | 0  | 0  | 0  | 0  | 0  | 0  | 0  | 0  |
| S28             | 1     | 0               | 0  | 0  | 0  | 1  | 0  | 0  | 0  | 0  | 0  | 0  | 0  | 0  | 0  |
| S29             | 2     | 0               | 0  | 0  | 0  | 1  | 0  | 0  | 0  | 0  | 0  | 0  | 0  | 0  | 1  |
| S30             | 13    | 0               | 0  | 0  | 0  | 1  | 0  | 0  | 9  | 1  | 2  | 0  | 0  | 0  | 0  |
| S31             | 5     | 0               | 0  | 0  | 0  | 0  | 2  | 0  | 0  | 0  | 3  | 0  | 0  | 0  | 0  |
| S32             | 1     | 0               | 0  | 0  | 0  | 0  | 1  | 0  | 0  | 0  | 0  | 0  | 0  | 0  | 0  |
| S33             | 3     | 0               | 0  | 0  | 0  | 0  | 3  | 0  | 0  | 0  | 0  | 0  | 0  | 0  | 0  |
| S34             | 4     | 0               | 0  | 0  | 0  | 0  | 4  | 0  | 0  | 0  | 0  | 0  | 0  | 0  | 0  |
| S35             | 1     | 0               | 0  | 0  | 0  | 0  | 1  | 0  | 0  | 0  | 0  | 0  | 0  | 0  | 0  |
| S36             | 1     | 0               | 0  | 0  | 0  | 0  | 1  | 0  | 0  | 0  | 0  | 0  | 0  | 0  | 0  |
| S37             | 1     | 0               | 0  | 0  | 0  | 0  | 1  | 0  | 0  | 0  | 0  | 0  | 0  | 0  | 0  |
| S38             | 1     | 0               | 0  | 0  | 0  | 0  | 1  | 0  | 0  | 0  | 0  | 0  | 0  | 0  | 0  |
| S39             | 1     | 0               | 0  | 0  | 0  | 0  | 1  | 0  | 0  | 0  | 0  | 0  | 0  | 0  | 0  |
| S40             | 1     | 0               | 0  | 0  | 0  | 0  | 1  | 0  | 0  | 0  | 0  | 0  | 0  | 0  | 0  |
| S41             | 12    | 0               | 0  | 0  | 0  | 0  | 4  | 3  | 0  | 0  | 5  | 0  | 0  | 0  | 0  |



|     |    |   |   |   |   |   |    |   |   |   |   |   |   |   |   |
|-----|----|---|---|---|---|---|----|---|---|---|---|---|---|---|---|
| C15 | 3  | 0 | 1 | 0 | 0 | 0 | 0  | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 2 |
| C16 | 1  | 0 | 1 | 0 | 0 | 0 | 0  | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 |
| C17 | 3  | 0 | 1 | 0 | 1 | 1 | 0  | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 |
| C18 | 1  | 0 | 1 | 0 | 0 | 0 | 0  | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 |
| C19 | 5  | 0 | 0 | 3 | 0 | 2 | 0  | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 |
| C20 | 1  | 0 | 0 | 1 | 0 | 0 | 0  | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 |
| C21 | 1  | 0 | 0 | 1 | 0 | 0 | 0  | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 |
| C22 | 4  | 0 | 0 | 0 | 4 | 0 | 0  | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 |
| C23 | 4  | 0 | 0 | 0 | 4 | 0 | 0  | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 |
| C24 | 1  | 0 | 0 | 0 | 0 | 1 | 0  | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 |
| C25 | 2  | 0 | 0 | 0 | 0 | 1 | 0  | 0 | 0 | 0 | 0 | 0 | 0 | 1 | 0 |
| C26 | 1  | 0 | 0 | 0 | 0 | 1 | 0  | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 |
| C27 | 1  | 0 | 0 | 0 | 0 | 1 | 0  | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 |
| C28 | 6  | 0 | 0 | 0 | 0 | 0 | 5  | 0 | 0 | 0 | 0 | 0 | 1 | 0 | 0 |
| C29 | 12 | 0 | 0 | 0 | 0 | 0 | 12 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 |
| C30 | 12 | 0 | 0 | 0 | 0 | 0 | 3  | 0 | 0 | 0 | 9 | 0 | 0 | 0 | 0 |
| C31 | 2  | 0 | 0 | 0 | 0 | 0 | 0  | 2 | 0 | 0 | 0 | 0 | 0 | 0 | 0 |
| C32 | 1  | 0 | 0 | 0 | 0 | 0 | 0  | 1 | 0 | 0 | 0 | 0 | 0 | 0 | 0 |
| C33 | 1  | 0 | 0 | 0 | 0 | 0 | 0  | 1 | 0 | 0 | 0 | 0 | 0 | 0 | 0 |
| C34 | 1  | 0 | 0 | 0 | 0 | 0 | 0  | 1 | 0 | 0 | 0 | 0 | 0 | 0 | 0 |
| C35 | 1  | 0 | 0 | 0 | 0 | 0 | 0  | 1 | 0 | 0 | 0 | 0 | 0 | 0 | 0 |
| C36 | 1  | 0 | 0 | 0 | 0 | 0 | 0  | 1 | 0 | 0 | 0 | 0 | 0 | 0 | 0 |
| C37 | 1  | 0 | 0 | 0 | 0 | 0 | 0  | 1 | 0 | 0 | 0 | 0 | 0 | 0 | 0 |
| C38 | 1  | 0 | 0 | 0 | 0 | 0 | 0  | 1 | 0 | 0 | 0 | 0 | 0 | 0 | 0 |
| C39 | 1  | 0 | 0 | 0 | 0 | 0 | 0  | 1 | 0 | 0 | 0 | 0 | 0 | 0 | 0 |
| C40 | 1  | 0 | 0 | 0 | 0 | 0 | 0  | 1 | 0 | 0 | 0 | 0 | 0 | 0 | 0 |
| C41 | 1  | 0 | 0 | 0 | 0 | 0 | 0  | 1 | 0 | 0 | 0 | 0 | 0 | 0 | 0 |
| C42 | 1  | 0 | 0 | 0 | 0 | 0 | 0  | 1 | 0 | 0 | 0 | 0 | 0 | 0 | 0 |
| C43 | 1  | 0 | 0 | 0 | 0 | 0 | 0  | 1 | 0 | 0 | 0 | 0 | 0 | 0 | 0 |
| C44 | 2  | 0 | 0 | 0 | 0 | 0 | 0  | 2 | 0 | 0 | 0 | 0 | 0 | 0 | 0 |
| C45 | 1  | 0 | 0 | 0 | 0 | 0 | 0  | 1 | 0 | 0 | 0 | 0 | 0 | 0 | 0 |
| C46 | 1  | 0 | 0 | 0 | 0 | 0 | 0  | 1 | 0 | 0 | 0 | 0 | 0 | 0 | 0 |
| C47 | 1  | 0 | 0 | 0 | 0 | 0 | 0  | 1 | 0 | 0 | 0 | 0 | 0 | 0 | 0 |
| C48 | 1  | 0 | 0 | 0 | 0 | 0 | 0  | 1 | 0 | 0 | 0 | 0 | 0 | 0 | 0 |
| C49 | 3  | 0 | 0 | 0 | 0 | 0 | 0  | 0 | 3 | 0 | 0 | 0 | 0 | 0 | 0 |
| C50 | 9  | 0 | 0 | 0 | 0 | 0 | 0  | 0 | 9 | 0 | 0 | 0 | 0 | 0 | 0 |
| C51 | 1  | 0 | 0 | 0 | 0 | 0 | 0  | 0 | 1 | 0 | 0 | 0 | 0 | 0 | 0 |
| C52 | 3  | 0 | 0 | 0 | 0 | 0 | 0  | 0 | 0 | 3 | 0 | 0 | 0 | 0 | 0 |
| C53 | 2  | 0 | 0 | 0 | 0 | 0 | 0  | 0 | 0 | 2 | 0 | 0 | 0 | 0 | 0 |
| C54 | 1  | 0 | 0 | 0 | 0 | 0 | 0  | 0 | 0 | 0 | 1 | 0 | 0 | 0 | 0 |
| C55 | 1  | 0 | 0 | 0 | 0 | 0 | 0  | 0 | 0 | 0 | 1 | 0 | 0 | 0 | 0 |
| C56 | 1  | 0 | 0 | 0 | 0 | 0 | 0  | 0 | 0 | 0 | 0 | 1 | 0 | 0 | 0 |
| C57 | 7  | 0 | 0 | 0 | 0 | 0 | 0  | 0 | 0 | 0 | 0 | 5 | 0 | 2 | 0 |
| C58 | 1  | 0 | 0 | 0 | 0 | 0 | 0  | 0 | 0 | 0 | 0 | 1 | 0 | 0 | 0 |
| C59 | 1  | 0 | 0 | 0 | 0 | 0 | 0  | 0 | 0 | 0 | 0 | 1 | 0 | 0 | 0 |



<sup>a</sup> BH (Beihai), BS (Baise), CZ (Chongzuo), FC (Fangchenggang), GG (Guigang), GL (Guilin), HC (Hechi), HZ (Hezhou), LB (Laibin), LZ (Liuzhou), NN (Nanning), QZ (Qinzhou), WZ (Wuzhou), YL (Yulin).

**Table S3. Polymorphisms and neutrality tests of the *16S rDNA*, *COXI* and *ITS-2* genes of *R. microplus* in 14 regions**

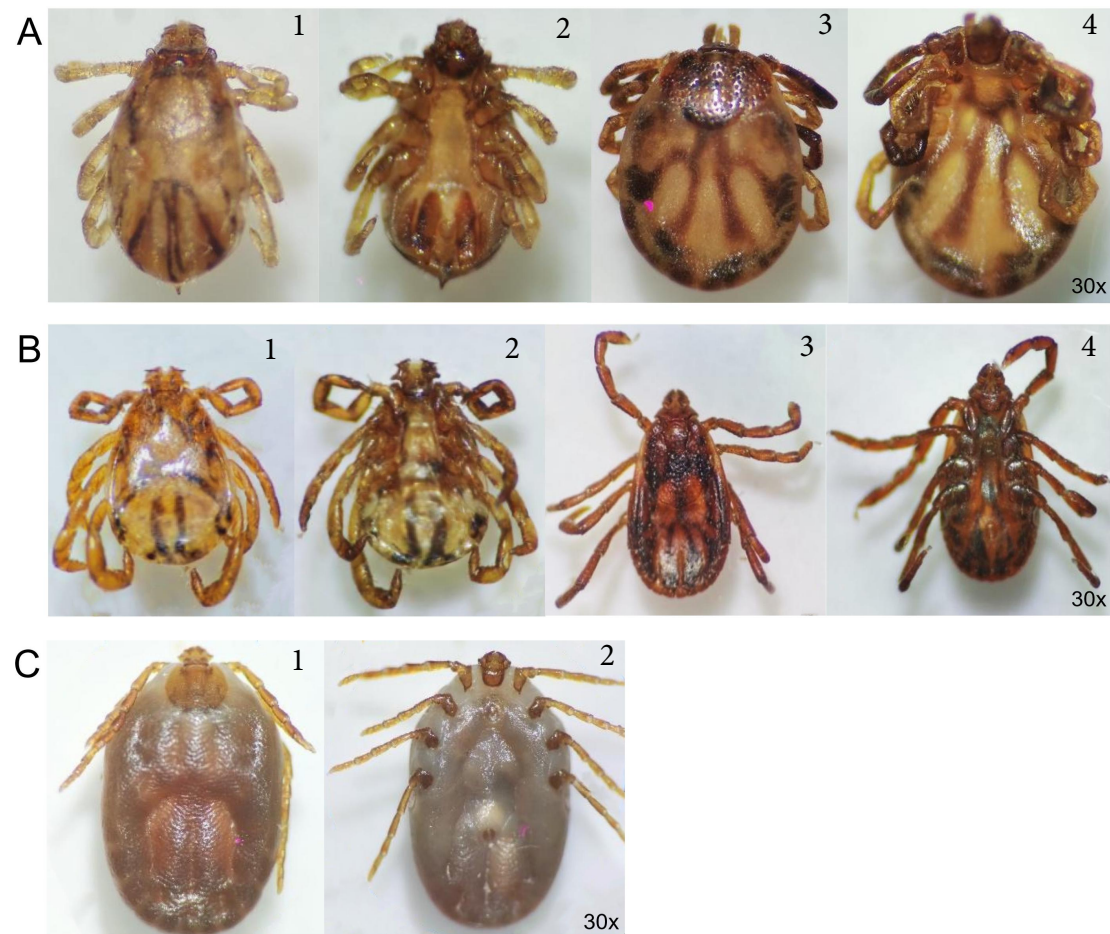
| Region                 | N   | H  | Hd    | S   | Pi      | K      | Tajima's D test         | Fu's Fs test            |
|------------------------|-----|----|-------|-----|---------|--------|-------------------------|-------------------------|
| <b><i>16S rDNA</i></b> |     |    |       |     |         |        |                         |                         |
| BH                     | 20  | 9  | 0.747 | 17  | 0.00826 | 3.089  | -0.88510                | -2.01813                |
| BS                     | 20  | 10 | 0.832 | 21  | 0.01096 | 3.889  | -1.07086                | -2.47466                |
| CZ                     | 20  | 6  | 0.516 | 13  | 0.00435 | 1.637  | -1.76227 <sup>*a</sup>  | -0.57273                |
| FC                     | 20  | 11 | 0.805 | 17  | 0.00905 | 3.411  | -1.28900                | -2.24503                |
| GG                     | 20  | 10 | 0.832 | 14  | 0.00588 | 2.216  | -1.64420 <sup>*</sup>   | -2.87508 <sup>*</sup>   |
| GL                     | 20  | 11 | 0.916 | 40  | 0.01737 | 6.637  | -1.63885 <sup>*</sup>   | -0.71725                |
| HC                     | 20  | 13 | 0.937 | 46  | 0.01851 | 6.905  | -1.70200 <sup>*</sup>   | -3.20953                |
| HZ                     | 20  | 7  | 0.742 | 9   | 0.00440 | 1.674  | -0.48880                | -1.75308                |
| LB                     | 20  | 4  | 0.595 | 3   | 0.00304 | 1.153  | 0.96973                 | 0.32450                 |
| LZ                     | 20  | 8  | 0.868 | 13  | 0.01338 | 5.016  | 1.33787                 | 0.76957                 |
| NN                     | 20  | 7  | 0.763 | 51  | 0.04325 | 16.047 | 0.55478                 | 9.32446                 |
| QZ                     | 20  | 9  | 0.842 | 20  | 0.00945 | 3.553  | -1.41064                | -0.49868                |
| WZ                     | 20  | 10 | 0.758 | 17  | 0.00955 | 3.600  | -0.89239                | -1.78884                |
| YL                     | 20  | 4  | 0.600 | 7   | 0.00408 | 1.542  | 0.93649                 | 1.54613                 |
| TOTAL                  | 280 | 71 | 0.827 | 127 | 0.01654 | 5.624  | -                       | -                       |
| <b><i>COXI</i></b>     |     |    |       |     |         |        |                         |                         |
| BH                     | 20  | 7  | 0.821 | 44  | 0.01108 | 6.579  | -1.81103 <sup>* a</sup> | 2.33169                 |
| BS                     | 20  | 12 | 0.847 | 68  | 0.01444 | 8.432  | -2.21254 <sup>**</sup>  | -2.14632                |
| CZ                     | 20  | 7  | 0.726 | 6   | 0.00195 | 1.163  | -0.97524                | -1.40574                |
| FC                     | 20  | 5  | 0.700 | 6   | 0.00318 | 1.900  | 0.33394                 | 0.02831                 |
| GG                     | 20  | 7  | 0.584 | 8   | 0.00149 | 0.889  | -2.04091 <sup>**</sup>  | -3.99996 <sup>**</sup>  |
| GL                     | 20  | 4  | 0.605 | 4   | 0.00326 | 1.947  | 1.76767                 | 2.09849                 |
| HC                     | 20  | 19 | 0.995 | 212 | 0.07984 | 46.468 | -1.00917                | -1.12922                |
| HZ                     | 20  | 5  | 0.726 | 4   | 0.00167 | 0.995  | 0.15517                 | -0.26335                |
| LB                     | 20  | 3  | 0.426 | 2   | 0.00077 | 0.458  | -0.44022                | -0.37748                |
| LZ                     | 20  | 5  | 0.726 | 208 | 0.07046 | 41.574 | -1.45583                | 23.78613                |
| NN                     | 20  | 7  | 0.711 | 47  | 0.01364 | 7.979  | -1.56234 <sup>*</sup>   | 2.08053                 |
| QZ                     | 20  | 8  | 0.863 | 51  | 0.01168 | 6.937  | -2.11681 <sup>**</sup>  | 1.85219                 |
| WZ                     | 20  | 7  | 0.584 | 19  | 0.00334 | 1.989  | -2.32440 <sup>**</sup>  | -0.73956                |
| YL                     | 20  | 5  | 0.737 | 50  | 0.02370 | 13.132 | -0.29237                | 8.51117                 |
| TOTAL                  | 280 | 70 | 0.806 | 295 | 0.03155 | 16.561 | -                       | -                       |
| <b><i>ITS-2</i></b>    |     |    |       |     |         |        |                         |                         |
| BH                     | 20  | 4  | 0.363 | 3   | 0.00055 | 0.389  | -1.44071                | -2.13527 <sup>* a</sup> |
| BS                     | 20  | 4  | 0.616 | 12  | 0.00230 | 1.626  | -1.86373 <sup>*</sup>   | 1.19654                 |
| CZ                     | 20  | 6  | 0.516 | 13  | 0.00222 | 1.568  | -1.90717 <sup>*</sup>   | -1.16917                |
| FC                     | 20  | 3  | 0.426 | 2   | 0.00064 | 0.458  | -0.44022                | -0.37748                |
| GG                     | 20  | 6  | 0.447 | 6   | 0.00085 | 0.600  | -2.05624 <sup>**</sup>  | -3.95175 <sup>**</sup>  |

|       |     |    |       |     |         |        |            |           |
|-------|-----|----|-------|-----|---------|--------|------------|-----------|
| GL    | 20  | 2  | 0.100 | 38  | 0.00537 | 3.800  | -2.54836** | 8.06385   |
| HC    | 20  | 8  | 0.795 | 9   | 0.00208 | 1.484  | -1.42693   | -3.31888* |
| HZ    | 20  | 3  | 0.195 | 3   | 0.00042 | 0.300  | -1.72331*  | -1.14276  |
| LB    | 20  | 4  | 0.284 | 3   | 0.00042 | 0.300  | -1.51284*  | -1.86305* |
| LZ    | 20  | 3  | 0.195 | 2   | 0.00028 | 0.200  | -1.51284*  | -1.86305* |
| NN    | 20  | 6  | 0.716 | 91  | 0.04466 | 30.147 | 0.71773    | 15.72447  |
| QZ    | 20  | 4  | 0.363 | 4   | 0.00069 | 0.489  | -1.63814*  | -1.61348* |
| WZ    | 20  | 7  | 0.689 | 10  | 0.00256 | 1.821  | -0.84629   | -1.61327  |
| YL    | 20  | 7  | 0.642 | 42  | 0.00838 | 5.926  | -1.97677** | 2.02306   |
| TOTAL | 280 | 33 | 0.487 | 146 | 0.00566 | 3.762  | -          | -         |

Abbreviations: H number of haplotypes, S the number of segregating sites, K the average number of nucleotide differences, Hd the haplotypes diversity, Pi is nucleotide diversity

<sup>a</sup> P<0.05\*, P<0.01\*\*

**Figure S1. Morphological characterization of the microtome, *R. microplus* and *H. cornigera*, *R. sanguineus***



A: A1-2 The frontal view and ventral view of male *R. microplus*, A3-4: The frontal view and ventral view of female *R. microplus*; B: B1-2 The frontal view and ventral view of male *R. sanguineus*, B3-4: The frontal view and ventral view of female *R. sanguineus*; C: C1-2 The frontal view and ventral view of female *H. cornigera*.