**Table S3.**

Alignment attributes and best-fit models. Lengths of alignments, numbers of variable (VP) and parsimony informative (PI) positions and models estimated for all partitions. BEAST and MrBayes models were calculated in Partition Finder 2 (PF2, Lanfear et al., 2016) implemented in PhyloSuite v1.2.2 (Zhang et al., 2020) under AICc criterion, with greedy algorithm (Lanfear et al., 2016) and branch lengths linked. For ML trees the models and partitioning schemes were estimated under BIC by ModelFinder (Kalyaanamoorthy et al. 2017) implemented in IQ tree. The values and models were calculated for both (A) full as well as (B) reduced dataset. Table (C) provides an overview of data attributes for the ingroup dataset only.

|  |  |  |  |  |  |  |  |
| --- | --- | --- | --- | --- | --- | --- | --- |
| **A: full dataset** |  |  |  |  |  |  |  |
| locus |  | EGR3 | IRBP 2 | MYH6 | RAG1 | RH | Cytb |
| length (bp) |  | 876 | 831 | 777 | 950 | 844 | 1122 |
| Variable positions (VP) |  | 341 | 559 | 331 | 503 | 385 | 680 |
| % VP |  | 38.93 | 67.27 | 42.60 | 52.95 | 45.62 | 60.61 |
| Pars. Informative (PI) |  | 268 | 483 | 299 | 453 | 333 | 615 |
| % PI |  | 30.59 | 58.12 | 38.48 | 47.68 | 39.45 | 54.81 |
|  | partition |  |  |  |  |  |  |
| MrBayes models (PF2, AICc) | gene | GTR+I+G  | SYM+I+G | GTR+I+G  | SYM+I+G | GTR+I+G  | GTR+I+G  |
| 1st c.p. | GTR+I+G  | GTR+I+G  | GTR+I+G  | GTR+I+G  | SYM+I+G | SYM+I+G  |
| 2nd c.p. | GTR+I+G  | GTR+I+G  | GTR+I+G  | GTR+I+G  | GTR+I+G  | GTR+I+G |
| 3rd c.p. | GTR+I+G  | SYM+I+G  | SYM+G | SYM+I+G | GTR+G | GTR+G |
| IQ-Tree models (ModelFinder, BIC) | gene | TPM2u+F+I+G4 | TIM2e+I+G4 | TIM2e+I+G4 | TIM2e+I+G4 | TIM2e+I+G4 | TVM+F+I+G4 |
| 1st c.p. | TIM2e+I+G4 | TIM3+F+R3 | TN+F+R3 | TIM2e+R3 | TIM2e+R3 | TIM2e+I+G4 |
| 2nd c.p. | TIM3e+R2 | TVM+F+G4 | TIM2+F+R3 | TVMe+I+G4 | TPM2+F+R3 | TVM+F+R4 |
| 3rd c.p. | GTR+F+G4 | TIM2e+R3 | TIM2e+R4 | TVMe+G4 | TIM2+F+G4 | TIM2+F+ASC+R5 |
| BEAST models (PF2, AICc) | gene | GTR+I+G+X | GTR+I+G+X | GTR+I+G+X | GTR+I+G+X | GTR+I+G+X | GTR+I+G+X |
| 1st c.p. | N/E | N/E | N/E | N/E | N/E | N/E |
| 2nd c.p. | N/E | N/E | N/E | N/E | N/E | N/E |
| 3rd c.p. | N/E | N/E | N/E | N/E | N/E | N/E |

**Table S3 continuation**

|  |  |  |  |  |  |  |
| --- | --- | --- | --- | --- | --- | --- |
| **B: reduced dataset** |  |  |  |  |  |  |
| locus |  | EGR3 | IRBP 2 | MYH6 | RAG1 | RH | Cytb |
| alignment bp |  | 876 | 831 | 777 | 950 | 844 | 1122 |
| var.pos. |  | 341 | 546 | 327 | 500 | 376 | 681 |
| % V |  | 38.93 | 65.70 | 42.08 | 52.63 | 44.55 | 60.70 |
| Pars. Inf. |  | 268 | 436 | 284 | 427 | 312 | 579 |
| % PI |  | 30.59 | 52.47 | 36.55 | 44.95 | 36.97 | 51.60 |
|  | partition |  |  |  |  |  |  |
| MrBayes models (PF2, AICc) | gene | GTR+I+G  | SYM+I+G | GTR+I+G  | SYM+I+G | GTR+I+G  | GTR+I+G  |
| 1st c.p. | GTR+I+G  | GTR+I+G | GTR+I+G | SYM+I+G | SYM+I+G  | SYM+I+G |
| 2nd c.p. | GTR+I+G  | GTR+I+G | GTR+I+G | GTR+I+G | GTR+I+G | GTR+I+G |
| 3rd c.p. | GTR+I | SYM+I+G | SYM+G | SYM+I+G | GTR+G | GTR+G |
| IQ-Tree models (ModelFinder, BIC)  | gene | HKY+F+I+G4 | TIM2e+I+G4 | TN+F+I+G4 | TIM2e+I+G4 | TPM2+F+I+G4 | GTR+F+I+G4 |
| 1st c.p. | TIM2+F+I+G4 | TIM3+F+G4  | K2P+I+G4  | TIM2e+I+G4  | TNe+I+G4 | TIM2e+I+G4 |
| 2nd c.p. | TIM2+F+I+G4 | TVM+F+G4 | TIM2+F+I+G4 | TIM2e+I+G4  | TVM+F+I+G4 | TVM+F+G4 |
| 3rd c.p. | K2P+G4 | TIM2e+G4 | TIM2e+G4 | TVMe+I+G4 | TIM2e+G4 | TIM2+F+ASC+G4 |
| BEAST models (PF2, AICc)   | gene | GTR+I+G+X | GTR+I+G+X | GTR+I+G+X | GTR+I+G+X | GTR+I+G+X | GTR+I+G+X |
| 1st c.p. | HKY+I+G+X | TRN+I+G+X | TRN+I+G+X | GTR+I+G+X | GTR+I+G+X | GTR+I+G+X |
| 2nd c.p. | GTR+I+G+X | GTR+G+X | GTR+I+G+X | GTR+I+G+X | GTR+I+G+X | GTR+I+G+X |
| 3rd c.p. | GTR+G+X | GTR+I+G+X | GTR+G+X | GTR+I+G+X | GTR+G+X | GTR+G+X |

|  |  |  |  |
| --- | --- | --- | --- |
| **Table S3 continuation****C: full dataset only ingroup** |  |  |  |
| Locus | length (bp) | VP | % VP | PI | % PI |
| EGR3 | 876 | 286 | 32.65 | 207 | 23.63 |
| IRBP 2 | 831 | 524 | 63.06 | 443 | 53.31 |
| MYH6 | 777 | 313 | 40.28 | 286 | 36.81 |
| RAG1 | 950 | 463 | 48.74 | 425 | 44.74 |
| RH | 844 | 352 | 41.71 | 307 | 36.37 |
| Cytb | 1122 | 668 | 59.54 | 610 | 54.37 |

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