

Table S1. The best partitioning schemes and substitution models for PCG123 dataset comprising 13 PCGs of 59 species used for ML phylogenetic analyses.

| Subset | Best Model | Partition names |
|---------------|-------------------|--|
| Partition1 | GTR+I+G | <i>nad4L_codon1</i> , <i>atp6_codon1</i> , <i>nad1_codon1</i> , <i>nad5_codon1</i> , <i>nad4_codon1</i> |
| Partition2 | TVM+I+G | <i>cox3_codon2</i> , <i>cytb_codon2</i> , <i>cox2_codon2</i> , <i>atp6_codon2</i> |
| Partition3 | HKY+I+G | <i>atp6_codon3</i> , <i>cox3_codon3</i> , <i>cox2_codon3</i> |
| Partition4 | GTR+I+G | <i>atp8_codon1</i> , <i>nad2_codon1</i> , <i>nad3_codon1</i> , <i>nad6_codon1</i> |
| Partition5 | TVM+I+G | <i>nad3_codon2</i> , <i>nad6_codon2</i> , <i>nad2_codon2</i> , <i>atp8_codon2</i> |
| Partition6 | GTR+G | <i>atp8_codon3</i> , <i>cytb_codon3</i> , <i>nad3_codon3</i> , <i>nad6_codon3</i> |
| Partition7 | GTR+I+G | <i>cox1_codon1</i> |
| Partition8 | TVM+I+G | <i>cox1_codon2</i> |
| Partition9 | TIM+I+G | <i>cox1_codon3</i> |
| Partition10 | GTR+I+G | <i>cox3_codon1</i> , <i>cox2_codon1</i> , <i>cytb_codon1</i> |
| Partition11 | GTR+I+G | <i>nad4_codon2</i> , <i>nad5_codon2</i> , <i>nad1_codon2</i> , <i>nad4L_codon2</i> |
| Partition12 | HKY+G | <i>nad1_codon3</i> |
| Partition13 | TRN+G | <i>nad2_codon3</i> |
| Partition14 | HKY+G | <i>nad4_codon3</i> , <i>nad4L_codon3</i> , <i>nad5_codon3</i> |