

**Supplementary Table S2.** Complete mitochondrial genomes used in this study, and associated Genbank accession numbers. Double asterisks to the left of accession numbers indicate new mitochondrial genomes generated in this study.

| Vertebrate Group | Genbank Accession | Taxon                           | Vertebrate Group | Genbank Accession | Taxon                           |
|------------------|-------------------|---------------------------------|------------------|-------------------|---------------------------------|
| Amphibians       | NC_002756         | <i>Mertensiella luschani</i>    | Crocodylians     | NC_004448         | <i>Alligator sinensis</i>       |
|                  | NC_001573         | <i>Xenopus laevis</i>           |                  | NC_001922         | <i>A. mississippiensis</i>      |
| Turtles          | NC_000886         | <i>Chelonia mydas</i>           |                  | NC_002744         | <i>Caiman crocodilus</i>        |
|                  | NC_002073         | <i>Chrysemys picta</i>          | D. Ray           |                   | <i>Crocodylus moreletii</i>     |
|                  | NC_002780         | <i>Dogania subplana</i>         |                  | NC_008241         | <i>Gavialis gangeticus</i>      |
|                  | NC_001947         | <i>Pelomedusa subrufa</i>       | Birds            | NC_002782         | <i>Apteryx haastii</i>          |
| Tuatara          | NC_004815         | <i>Sphenodon punctatus</i>      |                  | NC_003128         | <i>Buteo buteo</i>              |
| Lizards          | NC_005958         | <i>Abronia graminea</i>         |                  | NC_002196         | <i>Ciconia boyciana</i>         |
|                  | NC_006284         | <i>Amphisbaena schmidti</i>     |                  | NC_002197         | <i>C. ciconia</i>               |
| **               | GB_#####          | <i>Anolis carolinensis</i>      |                  | NC_002069         | <i>Corvus frugilegus</i>        |
|                  | NC_006287         | <i>Bipes biporus</i>            |                  | NC_002784         | <i>Dromaius novaehollandiae</i> |
|                  | NC_006288         | <i>B. caniculatus</i>           |                  | NC_000878         | <i>Falco peregrinus</i>         |
|                  | NC_006286         | <i>B. tridactylus</i>           |                  | NC_001323         | <i>Gallus gallus</i>            |
|                  | NC_005962         | <i>Cordylus warreni</i>         |                  | NC_000846         | <i>Rhea americana</i>           |
|                  | NC_006283         | <i>Diplometopon zarudnyi</i>    |                  | NC_000879         | <i>Smithornis sharpei</i>       |
|                  | NC_006285         | <i>Geocalamus acutus</i>        |                  | NC_002785         | <i>Struthio camelus</i>         |
|                  | NC_000888         | <i>Eumeces egregious</i>        |                  | NC_002781         | <i>Tinamus major</i>            |
|                  | NC_002793         | <i>Iguana iguana</i>            |                  | NC_000880         | <i>Vidua chalybeata</i>         |
| **               | GB_#####          | <i>Ophisaurus attenuatus</i>    | Mammals          | NC_001567         | <i>Bos taurus</i>               |
|                  | NC_006282         | <i>Rhineura floridana</i>       |                  | NC_002763         | <i>Cebus albifrons</i>          |
|                  | NC_005960         | <i>Sceloporus occidentalis</i>  |                  | NC_002082         | <i>Hylobates lar</i>            |
|                  | NC_005959         | <i>Shinisaurus crocodilurus</i> |                  | NC_001646         | <i>Pongo pygmaeus</i>           |
|                  | AB080275-6        | <i>Varanus komodoensis</i>      |                  | NC_001644         | <i>Pan paniscus</i>             |
| **               | GB_#####          | <i>V. salvator</i>              |                  | NC_001645         | <i>Gorilla gorilla</i>          |
| Snakes           | NC_007400         | <i>Acrochordus granulatus</i>   |                  | NC_001807         | <i>Homo sapiens</i>             |
|                  | DQ523162          | <i>Agkistrodon piscivorus</i>   |                  | NC_001992         | <i>Papio hamadryas</i>          |
|                  | NC_007398         | <i>Boa constrictor</i>          |                  | NC_002764         | <i>Macaca sylvanus</i>          |
|                  | NC_007401         | <i>Cylindrophis ruffus</i>      |                  | NC_002811         | <i>Tarsius bancanus</i>         |
|                  | NC_001945         | <i>Dinodon semicarinatus</i>    |                  | NC_004025         | <i>Lemur catta</i>              |
|                  | NC_005961         | <i>Leptotyphlops dulcis</i>     |                  | NC_002765         | <i>Nycticebus coucang</i>       |
|                  | NC_007397         | <i>Ovophis okinavensis</i>      |                  |                   |                                 |
|                  | DQ523161          | <i>Pantherophis slowinskii</i>  |                  |                   |                                 |
|                  | NC_007399         | <i>Python regius</i>            |                  |                   |                                 |
| **               | GB_#####          | <i>Typhlops reticulatus</i>     |                  |                   |                                 |
|                  | NC_007402         | <i>Xenopeltis unicolor</i>      |                  |                   |                                 |