**Electronic Supplementary Information**

Table 1. Specimen list, ordered smallest to largest. GPIT, Geologisch-Paläontologisches Institut und Museum, Universität Tübingen; MHH, Urwelt Museum Hauff; NHMW, Naturhistorisches Museum Wien; PMU, **Evolutionsmuseet Paleontologi**, Uppsala Universitet; SMF, Senckenberg Forschungsinstitut und Naturmuseum Frankfurt; SMNS, Staatliches Museum für Naturkunde Stuttgart.

|  |  |  |  |  |  |
| --- | --- | --- | --- | --- | --- |
| Institution | Specimen | εII3 | εII4-6 | Juvenile | Adult |
| GPIT | IRE/208 | X |  | X |  |
| SMNS | 51959 | X |  | X |  |
| PMU | R435 | X |  | X |  |
| SMNS | 55109 | X |  | X |  |
| MHH | 2c | X |  | X |  |
| SMNS | 82046 | X |  | X |  |
| SMNS | 57009 | X |  | X |  |
| SMNS | 54872 | X |  | X |  |
| SMNS | 56860 |  |  | X |  |
| NHMW | A3802 |  |  | X |  |
| SMNS | unnumbered |  | X | X |  |
| SMNS | 50183 |  | X | X |  |
| SMNS | 54819 | X |  | X |  |
| GPIT | RE/7300 |  |  | X |  |
| SMNS | 81841 |  | X | X |  |
| MHH | 1981/13 | X |  | X |  |
| SMNS | 59706 | X |  | X |  |
| SMNS | 7800 |  | X | X |  |
| SMNS | 56615 |  | X | X |  |
| SMNS | 56631 |  | X | X |  |
| PMU | R158 |  |  | X |  |
| SMNS | 81958 |  | X | X |  |
| SMF | X |  |  | X |  |
| GPIT | TS |  |  | X |  |
| SMNS | 80116 |  | X | X |  |
| GPIT | RE/7299 | X |  | X |  |
| NHMW | 2010/0043/0001 |  |  | X |  |
| GPIT | RE/7298 |  | X | X |  |
| SMNS | 7384 |  |  | X |  |
| GPIT | RE/7301 |  |  |  | X |
| SMNS | 55934 | X |  |  | X |
| SMF | 457 |  | X |  | X |
| SMNS | 52036 |  |  |  | X |
| SMNS | 56856 |  |  |  | X |
| SMNS | 54062 |  |  |  | X |
| SMNS | 80234 |  | X |  | X |
| SMNS | 58881 | X |  |  | X |
| SMNS | 6293 | X |  |  | X |
| SMNS | 55343 | X |  |  | X |
| SMNS | 10460 | X |  |  | X |
| SMNS | 51948 | X |  |  | X |
| PMU | R153 |  |  |  | X |
| SMNS | 56584 |  |  |  | X |
| SMNS | 54064 | X |  |  | X |
| SMNS | 3775 | X |  |  | X |
| SMNS | 7402 |  | X |  | X |
| GPIT | 1491/1 |  | X |  | X |
| GPIT | 43/0219 |  |  |  | X |
| SMNS | 53424 | X |  |  | X |
| SMNS | 50963 | X |  |  | X |
| SMNS | 55748 |  | X |  | X |
| GPIT | 1491/8 | X |  |  | X |
| GPIT | 1491/2 |  |  |  | X |
| SMNS | 15033 |  | X |  | X |
| SMNS | 51142 |  |  |  | X |
| SMNS | 16811 |  | X |  | X |
| GPIT | 1491/9 |  | X |  | X |
| SMNS | 53001 |  |  |  | X |
| MHH | 3a |  |  |  | X |
| MHH | 1981/33 |  |  |  | X |

Table 2. Correlation coefficients above the diagonal, partial correlations below the diagonal. Strong partial correlations, as determined by edge exclusion deviance, are indicated in boldface.

*Stenopterygius quadriscissus* pooled sample.

|  |  |  |  |  |  |  |
| --- | --- | --- | --- | --- | --- | --- |
|  | Humerus (L) | Femur (L) | Radius (L) | Radiale (L) | Tibia (L) | Tibiale (L) |
| Humerus (L) |  | 0.9945 | 0.9889 | 0.9775 | 0.9841 | 0.9708 |
| Femur (L) | **0.7591** |  | 0.9876 | 0.9772 | 0.9799 | 0.9643 |
| Radius (L) | 0.2364 | 0.1671 |  | 0.9908 | 0.9877 | 0.9734 |
| Radiale (L) | -0.2151 | 0.0861 | **0.6797** |  | 0.9801 | 0.9747 |
| Tibia (L) | 0.188 | -0.0565 | **0.3541** | -0.03506 |  | 0.9761 |
| Tibiale (L) | 0.2479 | -0.1469 | -0.1537 | **0.3898** | **0.3398** |  |

εII3

|  |  |  |  |  |  |  |
| --- | --- | --- | --- | --- | --- | --- |
|  | Humerus (L) | Femur (L) | Radius (L) | Radiale (L) | Tibia (L) | Tibiale (L) |
| Humerus (L) |  | 0.9978 | 0.9912 | 0.9772 | 0.9902 | 0.9788 |
| Femur (L) | **0.8698** |  | 0.9895 | 0.9765 | 0.9886 | 0.9744 |
| Radius (L) | 0.3072 | -0.0917 |  | 0.9893 | 0.9903 | 0.9783 |
| Radiale (L) | -0.2567 | 0.1930 | **0.7184** |  | 0.9801 | 0.9747 |
| Tibia (L) | 0.0543 | 0.1308 | **0.4628** | -0.2551 |  | 0.9761 |
| Tibiale (L) | 0.3573 | -0.2616 | -0.1900 | **0.4311** | 0.2926 |  |

εII4-6

|  |  |  |  |  |  |  |
| --- | --- | --- | --- | --- | --- | --- |
|  | Humerus (L) | Femur (L) | Radius (L) | Radiale (L) | Tibia (L) | Tibiale (L) |
| Humerus (L) |  | 0.9862 | 0.9840 | 0.9752 | 0.9713 | 0.9608 |
| Femur (L) | **0.4859** |  | 0.9899 | 0.9846 | 0.9733 | 0.9607 |
| Radius (L) | 0.2910 | 0.3599 |  | 0.9943 | 0.9872 | 0.9682 |
| Radiale (L) | -0.2550 | 0.1384 | **0.6542** |  | 0.9839 | 0.9687 |
| tibia-w | -0.0338 | -0.2108 | 0.4412 | 0.0578 |  | 0.9728 |
| tibiale-w | 0.1949 | 0.0319 | -0.1552 | 0.2221 | 0.4114 |  |

Adult

|  |  |  |  |  |  |  |
| --- | --- | --- | --- | --- | --- | --- |
|  | Humerus (L) | Femur (L) | Radius (L) | Radiale (L) | Tibia (L) | Tibiale (L) |
| Humerus (L) |  | 0.9622 | 0.8649 | 0.7982 | 0.8074 | 0.6494 |
| Femur (L) | **0.8705** |  | 0.8571 | 0.7737 | 0.7800 | 0.5662 |
| Radius (L) | 0.0408 | 0.2199 |  | 0.9508 | 0.8968 | 0.7827 |
| Radiale (L) | -0.1265 | 0.0599 | **0.7028** |  | 0.8956 | 0.8613 |
| Tibia (L) | 0.0425 | 0.0695 | 0.2071 | 0.1221 |  | 0.8113 |
| Tibiale (L) | **0.3578** | **-0.4371** | -0.1197 | **0.5102** | 0.2808 |  |

Juvenile

|  |  |  |  |  |  |  |
| --- | --- | --- | --- | --- | --- | --- |
|  | Humerus (L) | Femur (L) | Radius (L) | Radiale (L) | Tibia (L) | Tibiale (L) |
| Humerus (L) |  | 0.9812 | 0.9749 | 0.9520 | 0.9765 | 0.9376 |
| Femur (L) | **0.5874** |  | 0.9709 | 0.9629 | 0.9656 | 0.9271 |
| Radius (L) | 0.3393 | -0.0949 |  | 0.9776 | 0.9707 | 0.9285 |
| Radiale (L) | -0.2466 | **0.4018** | **0.7024** |  | 0.9431 | 0.9269 |
| Tibia (L) | 0.2830 | 0.1432 | **0.4051** | -0.2581 |  | 0.9405 |
| Tibiale (L) | 0.2160 | -0.1094 | -0.2060 | 0.3432 | 0.3479 |  |