

Table S2. Raw data table for our study. Preference was given to modal values for Retzius periodicity (RP) data whenever possible, since RP is expressed in multiples of 1 day; whenever data were available for only two or three specimens, mean values were used. However, the majority of species samples consist only of a single individual. For species with high sexual dimorphism, values for both males and females were included separately where available. RP and osteocyte data lacking a citation are newly published values generated by our study. References given in main paper; wherever possible, RP, mass, and ECV data drawn from the compilation in Bromage *et al.* [2] and Isler *et al.* [26]. All SCR data from Spoor *et al.* [30].

† =Extinct species

* = Modal value reported from literature

** = Data are presented for more than one individual for these species, but too few individuals have been sampled to incorporate a reliable mode value. For these species, statistical analyses incorporate means of the reported values.

| <i>genus & species</i> | <i>RP, days (ln) [ref]</i> | <i>osteocyte density, per mm² (ln)</i> | <i>body mass, kg (ln) [ref]</i> | <i>endocranial volume, cc (ln) [ref]</i> | <i>semicircular canal radius, mm (ln)</i> | <i>basal metabolic rate, mL O₂/h (ln) [ref]</i> | <i>1st female reproduction, years (ln) [ref]</i> |
|-------------------------------------|------------------------------------|---|---|--|---|--|---|
| <i>strepsirrhines</i> | | | | | | | |
| <i>Archaeolemur major</i> † | 4 (1.386) [24] | -- | 18.2 (2.901) [27] | 93 (4.533) [27] | 3 (1.090) | -- | |
| <i>Avahi laniger</i> | 2 (0.693) | 632 (6.449) | 1.32 0.278 [26] | 9.86 (2.288) [26] | 1.9 (0.642) | -- | 2.58 (0.948) [1] |
| <i>Babakotia radofila</i> † | 2 (0.693) | -- | 20.7 (3.03) [27] | 48 (3.871) [27] | 2.4 (0.875) | -- | |
| <i>Cantius abditus</i> † | 3** (1.099) | -- | 3 (1.099) [22] | -- | -- | -- | |
| <i>Daubentonia madagascariensis</i> | 3,4** (1.253) | 549 (6.308) | 2.59 (0.952) [26] | 44.85 (3.803) [26] | 2.4 (0.875) | 1393.9 (7.240) [18] | 3.5 (1.253) [38] |

| genus & species | RP, days (ln) [ref] | osteocyte density, per mm² (ln) | body mass, kg (ln) [ref] | endocranial volume, cc (ln) [ref] | semicircular canal radius, mm (ln) | basal metabolic rate, mL O₂/h (ln) [ref] | 1st female reproduction, years (ln) [ref] |
|---|------------------------------------|---|---|--|---|--|---|
| <i>Eulemur sanfordi</i> | 3 (1.099) | 724 (6.595) | 2.292 (0.829) [26] | 25.77 (3.249) [26] | 2.2 (0.788) | 940 (6.846) [18] | 2.66 (0.978) [1] |
| <i>Galago moholi</i> | -- | 975 (6.882) | 0.244 (-1.411) [2] | 3.71 (1.311) [26] | 1.5 (0.405) | 198 (5.288) [18] | 0.71 (-0.342) [1] |
| <i>Hadropithecus stenognathus</i> † | 4 (1.386) [24] | -- | 35.4 (3.567) [27] | 115 (4.745) [27] | 2.7 (0.993) | -- | -- |
| <i>Hapalemur griseus</i> | 2 (0.693) | 857 (6.753) | 0.709 (-0.344) [26] | 14.09 (2.645) [26] | 2 (0.693) | -- | 2.73 (1.004) [1] |
| <i>Indri indri</i> | 2 (0.693) | -- | 6.84 (1.923) [26] | 34.81 (3.560) [26] | 2.7 (0.993) | -- | 8 (2.079) [36] |
| <i>Lemur catta</i> | 2,3,3** (0.981) | -- | 2.21 (0.793) [26] | 22.9 (3.131) [26] | 2.1 (0.742) | 651.4 (6.479) [18] | 2.63 (0.967) [1] |
| <i>Leptadapis magnus</i> † | 3 (1.099) | -- | 4 (1.386) [22] | 21.7 (3.077) [29] | -- | -- | -- |
| <i>Loris tardigradus</i> | 3 (1.099) | 476 (6.165) | 0.193 (-1.645) [26] | 5.87 (1.770) [26] | 1.2 (0.182) | 107.4 (4.677) [18] | 1.5 (0.405) [36] |
| <i>Megaladapis edwardsi</i> † | 3 (1.099) [13] | -- | 85.1 (4.444) [27] | 137 (4.920) [27] | 2.3 (0.833) | -- | -- |

| genus & species | RP, days (ln) [ref] | osteocyte density, per mm² (ln) | body mass, kg (ln) [ref] | endocranial volume, cc (ln) [ref] | semicircular canal radius, mm (ln) | basal metabolic rate, mL O₂/h (ln) [ref] | 1st female reproduction, years (ln) [ref] |
|---|------------------------------------|---|---|--|---|--|---|
| <i>Mesopropithecus globiceps</i> [†] | 3 (1.099) [19] | -- | 11.3 (2.425) [27] | 41 (3.714) [27] | 2.3 (0.833) | -- | -- |
| <i>Nycticebus coucang</i> | 2 (0.693) | 562 (6.332) | 0.679 (-0.387) [26] | 10.41 (2.343) [26] | 1.5 (0.405) | 273 (5.609) [18] | -- |
| <i>Otolemur crassicaudatus</i> | 2,3** (0.916) | -- | 1.15 (0.140) [26] | 11.78 (2.466) [26] | 2 (0.693) | 523 (6.260) [18] | 2.21 (0.793) [36] |
| <i>Palaeopropithecus ingens</i> [†] | 2 (0.693) [12] | -- | 41.5 (3.726) [27] | 80 (4.382) [27] | 1.9 (0.642) | -- | -- |
| <i>Perodicticus potto</i> | 2,3** (0.916) | 558 (6.324) | 0.835 (-0.180) [26] | 12.42 (2.519) [26] | 1.7 (0.531) | 326 (5.787) [18] | 2.03 (0.708) [36] |
| <i>Propithecus coquereli</i> | 2 (0.693) | 619 (6.428) | 4.052 (1.399) [26] | 30.19 (3.408) [26] | -- | 1012.3 (6.920) [18] | -- |
| <i>Propithecus diadema</i> | 3 (1.099) | -- | 5.76 (1.751) [26] | 40.92 (3.711) [26] | 2.7 (0.993) | -- | 4.51 (1.506) [1] |
| <i>Propithecus verreauxi</i> | 2 (0.693) [12] | -- | 2.95 (1.082) [26] | 26.21 (3.266) [26] | 2.3 (0.751) | 670 (6.507) [18] | 4.57 (1.519) [1] |
| <i>Varecia variegata</i> | 3 (1.099) | 471 (6.155) | 3.52 (1.258) [26] | 32.12 (3.469) [26] | 2.2 (0.788) | 603.6 (6.403) [18] | 2.72 (1.001) [1] |

| <i>genus & species</i> | <i>RP, days (ln) [ref]</i> | <i>osteocyte density, per mm² (ln)</i> | <i>body mass, kg (ln) [ref]</i> | <i>endocranial volume, cc (ln) [ref]</i> | <i>semicircular canal radius, mm (ln)</i> | <i>basal metabolic rate, mL O₂/h (ln) [ref]</i> | <i>1st female reproduction, years (ln) [ref]</i> |
|--|------------------------------------|---|---|--|---|--|---|
| anthropoids | | | | | | | |
| <i>Afropithecus turkanensis</i> [†] | 8 (2.079) [2] | -- | 34.5 (3.541) [2] | -- | -- | -- | |
| <i>Alouatta</i> sp. | 6 (1.792) [2] | -- | 6.415 (1.859) [26] | 54.3 (3.995) [26] | 2.4 (0.875) | 2055 (7.628) [32] | 3.8 (1.335) [7] |
| <i>Aotus</i> sp. | 3 (1.099) [2] | -- | 0.91 (-0.094) [26] | 17.74 (2.876) [26] | 2 (0.693) | 496 (6.207) [23] | 2.42 (0.884) [7] |
| <i>Callicebus personatus</i> | 3 (1.099) [2] | -- | 1.305 (0.266) [26] | 19.84 (2.988) [26] | -- | -- | -- |
| <i>Callimico goeldii</i> | 3 (1.099) [2] | -- | 0.389 (-0.944) [26] | 11.24 (2.419) [26] | 1.6 (0.470) | -- | 1.3 (0.262) [7] |
| <i>Callithrix humeralifer</i> | 3 (1.099) [2] | -- | 0.35 (-1.040) [2] | 8.2 (2.104) [26] | -- | -- | 1.6 (0.470) [7] |
| <i>Callithrix jacchus</i> | 1 (0) [2] | -- | 0.257 (-1.359) [26] | 7.21 (1.975) [26] | 1.5 (0.405) | 154 (5.037) [23] | 1.67 (0.513) [7] |
| <i>Cebuella pygmaea</i> | 1 (0) [2] | -- | 0.123 (-2.096) [26] | 4.24 (1.444) [26] | -- | 89 (4.489) [23] | 1.9 (0.642) [7] |
| <i>Cebus albifrons</i> (M) | 6 (1.792) [2] | -- | 2.48 (0.908) [26] | 64.11 (4.161) [26] | -- | -- | 4 (1.386) [7] |

| genus & species | RP, days (ln) [ref] | osteocyte density, per mm² (ln) | body mass, kg (ln) [ref] | endocranial volume, cc (ln) [ref] | semicircular canal radius, mm (ln) | basal metabolic rate, mL O₂/h (ln) [ref] | 1st female reproduction, years (ln) [ref] |
|---------------------------------|------------------------------------|---|---|--|---|--|---|
| <i>Cebus albifrons</i> (F) | 5 (1.609) [2] | -- | 1.814 (0.596) [26] | 63.24 (4.147) [26] | -- | -- | 4 (1.386) [7] |
| <i>Cebus apella</i> (M) | 5 (1.609) [2] | -- | 3.38 (1.218) [26] | 68.94 (4.233) [26] | 2.2 (0.788) | -- | 5.78 (1.754) [7] |
| <i>Cebus apella</i> (F) | 4 (1.386) [2] | -- | 2.49 (0.912) [26] | 64.3 (4.164) [26] | 2.2 (0.788) | -- | 5.78 (1.754) [7] |
| <i>Cebus capucinus</i> (M) | 6 (1.792) [2] | -- | 3.267 (1.184) [26] | 73.13 (4.292) [26] | -- | -- | 4 (1.386) [7] |
| <i>Cebus capucinus</i> (F) | 4 (1.386) [2] | -- | 3.267 (1.184) [26] | 72.12 (4.278) [26] | -- | -- | 4 (1.386) [7] |
| <i>Cebus olivaceus</i> | 4 (1.386) [2] | -- | 2.974 (1.090) [26] | 69.84 (4.246) [26] | -- | -- | 6 (1.792) [7] |
| <i>Cercopithecus mona</i> | 4 (1.386) | -- | 3.313 (1.198) [26] | 61.84 (4.125) [26] | 2.3 (0.833) | -- | 4 (1.386) [34] |
| <i>Chlorocebus tantalus</i> | 3,4** (1.253) | -- | 4.082 (1.407) [26] | 56.77 (4.039) [26] | 2.3 (0.833) | -- | 4 (1.386) [37] |
| <i>Colobus polykomos</i> | 4 (1.386) | -- | 8.654 (2.158) [26] | 73.38 (4.296) [26] | 2.9 (1.065) | -- | 8.5 (2.140) [35] |

| genus & species | RP, days (ln) [ref] | osteocyte density, per mm² (ln) | body mass, kg (ln) [ref] | endocranial volume, cc (ln) [ref] | semicircular canal radius, mm (ln) | basal metabolic rate, mL O₂/h (ln) [ref] | 1st female reproduction, years (ln) [ref] |
|-----------------------------------|------------------------------------|---|---|--|---|--|---|
| <i>Dryopithecus laietanus</i> † | 7 (1.946) [2] | -- | 23 (3.135) [2] | -- | -- | -- | -- |
| <i>Erythrocebus patas</i> | 4 (1.386) [2] | -- | 4.8 (1.569) [26] | 93.88 (4.542) [26] | 2.5 (0.916) | 1068 (6.974) [32] | 3 (1.099) [35] |
| <i>Gigantopithecus blacki</i> † | 11 (2.398) [2] | -- | 300 (5.704) [2] | -- | -- | -- | -- |
| <i>Gorilla gorilla</i> (M) | 10* (2.303) [2] | -- | 169.3 (5.132) [26] | 524.92 (6.263) [26] | 3 (1.099) | -- | 10.3 (2.332) [1] |
| <i>Gorilla gorilla</i> (F) | 9* (2.197) [2] | -- | 75.7 (4.327) [26] | 455.89 (6.122) [26] | 3 (1.099) | -- | 10.3 (2.332) [1] |
| <i>Graecopithecus freybergi</i> † | 8 (2.079) [2] | -- | 63 (4.143) [2] | -- | -- | -- | -- |
| <i>Homo sapiens</i> (M) | 8* (2.079) [2] | -- | 60.2 (4.098) [26] | 1409 (7.251) [26] | 2.9 (1.065) | 12500 (9.433) [23] | 19.3 (2.961) [35] |
| <i>Homo sapiens</i> (F) | 8* (2.079) [2] | -- | 53.6 (3.982) [26] | 1409 (7.251) [26] | 2.9 (1.065) | 12500 (9.433) [23] | 19.3 (2.961) [35] |
| <i>Hylobates lar</i> | 4 (1.386) [2] | -- | 5.6 (1.723) [26] | 102.11 (4.626) [26] | 2.6 (0.956) | -- | 9.8 (2.282) [33] |

| genus & species | RP, days (ln) [ref] | osteocyte density, per mm² (ln) | body mass, kg (ln) [ref] | endocranial volume, cc (ln) [ref] | semicircular canal radius, mm (ln) | basal metabolic rate, mL O₂/h (ln) [ref] | 1st female reproduction, years (ln) [ref] |
|--------------------------------------|------------------------------------|---|---|--|---|--|---|
| <i>Hylobates syndactylus</i> | 4,5** (1.504) [2] | -- | 10.7 (2.370) [26] | 123.83 (4.819) [26] | 2.8 (1.030) | -- | 9 (2.197) [33] |
| <i>Lagothrix poeppigii</i> | 5,6** (1.705) | -- | 9.072 (2.205) [26] | 99.23 (4.597) [26] | 2.5 (0.916) | -- | 5 (1.609) [36] |
| <i>Leontopithecus rosalia</i> | 3 (1.099) [2] | -- | 0.628 (-0.465) [26] | 12.65 (2.538) [26] | 1.5 (0.405) | 382 (5.945) [23] | 2.4 (0.875) [7] |
| <i>Macaca nemestrina</i> | 4 (1.386) [2] | -- | 7.8 (2.054) [26] | 106.04 (4.664) [26] | 2.5 (0.916) | -- | 3.9 (1.361) [1] |
| <i>Pan troglodytes</i> | 6 (1.792) [2] | -- | 35.8 (3.578) [26] | 377.57 (5.934) [26] | 2.7 (0.993) | 9070 (9.113) [23] | 13.9 (2.632) [1] |
| <i>Papio hamadryas hamadryas</i> | 7 (1.946) [2] | -- | 9.4 (2.241) [26] | 149.93 (5.010) [26] | 2.7 (0.993) | -- | 6.1 (1.808) [36] |
| <i>Papio hamadryas anubis</i> | 7 (1.946) [2] | -- | 21 (3.044) [26] | 168.64 (5.128) [26] | 2.7 (0.993) | 2778 (7.929) [32] | 4.5 (1.504) [1] |
| <i>Pongo pygmaeus (M)</i> | 10* (2.303) [2] | -- | 78.3 (4.361) [26] | 427.51 (6.058) [26] | 2.6 (0.956) | 4860 (8.489) [21] | 14.32 (2.662) [1] |
| <i>Pongo pygmaeus (F)</i> | 10* (2.303) [2] | -- | 35.8 (3.578) [26] | 338.51 (5.825) [26] | 2.6 (0.956) | 4860 (8.489) [21] | 14.32 (2.662) [1] |

| genus & species | RP, days (ln) [ref] | osteocyte density, per mm² (ln) | body mass, kg (ln) [ref] | endocranial volume, cc (ln) [ref] | semicircular canal radius, mm (ln) | basal metabolic rate, mL O₂/h (ln) [ref] | 1st female reproduction, years (ln) [ref] |
|--|------------------------------------|---|---|--|---|--|---|
| <i>Proconsul heseloni</i> [†] | 5 (1.609) [2] | -- | 10.5 (2.351) [2] | 167 (5.118) [31] | -- | -- | -- |
| <i>Proconsul nyanzae</i> [†] | 6 (1.792) [2] | -- | 35 (3.555) [2] | -- | -- | -- | -- |
| <i>Saguinus fuscicollis</i> | 2 (0.693) [2] | -- | 0.373 (-0.986) [26] | 7.92 (2.069) [26] | -- | -- | 2.33 (0.846) [7] |
| <i>Saguinus nigricollis</i> | 2 (0.693) [2] | -- | 0.45 (-0.734) [25] | 8.9 (2.186) [25] | -- | -- | 2.33 (0.846) [7] |
| <i>Saguinus oedipus</i> | 1 (0) [2] | -- | 0.43 (-0.844) [26] | 9.71 (2.273) [26] | 1.5 (0.405) | -- | 1.89 (0.637) [7] |
| <i>Saimiri boliviensis</i> | 3 (1.099) [2] | -- | 0.7 (-0.357) [2] | 25.64 (3.244) [26] | -- | -- | -- |
| <i>Saimiri oerstedii</i> | 3 (1.099) [2] | -- | 0.829 (-0.188) [26] | 24.97 (3.218) [26] | -- | -- | -- |
| <i>Saimiri sciureus</i> | 3 (1.099) [2] | -- | 0.852 (-0.16) [26] | 23.62 (3.162) [26] | 1.9 (0.642) | 592 (6.383) [23] | 2.5 (0.916) [7] |
| <i>Semnopithecus entellus priam</i> | 5 (1.609) [2] | -- | 9.9 (2.293) [26] | 110.93 (4.709) [26] | 2.5 (0.916) | -- | 4.5 (1.504) [33] |

| <i>genus & species</i> | <i>RP, days (ln) [ref]</i> | <i>osteocyte density, per mm² (ln)</i> | <i>body mass, kg (ln) [ref]</i> | <i>endocranial volume, cc (ln) [ref]</i> | <i>semicircular canal radius, mm (ln)</i> | <i>basal metabolic rate, mL O₂/h (ln) [ref]</i> | <i>1st female reproduction, years (ln) [ref]</i> |
|-------------------------------------|------------------------------------|---|---|--|---|--|---|
| <i>Theropithecus gelada</i> (M) | 7 (1.946) [2] | -- | 20.5 (3.020) [26] | 142.13 (4.957) [26] | 2.5 (0.916) | -- | 4 (1.386) [36] |
| <i>Theropithecus gelada</i> (F) | 7 (1.946) [2] | -- | 13.6 (2.610) [26] | 124.52 (4.824) [26] | 2.5 (0.916) | -- | 4 (1.386) [36] |
| <i>Theropithecus oswaldi</i> † | 6 (1.792) [28] | -- | 25 (3.219) [20] | -- | -- | -- | -- |
| <i>Trachypithecus cristatus</i> | 4 (1.386) | -- | 6.3 (1.841) [26] | 57.86 (4.058) [26] | -- | -- | 4 (1.386) [1] |