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SUPPLEMENTARY ONLINE MATERIAL FOR

## **Estimating body mass from the astragalus in mammals**

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Published in *Acta Palaeontologica Polonica* 201X 59 (2): 259–265.  
<http://dx.doi.org/10.4202/app.2011.0067>

SOM 1. Astragal measurements for the 80 individuals of extant mammals analyzed in this study.

SOM 2. Measurements of Li1 and Li2 (Fig. 1) for the Paleogene taxa included in this study.

SOM 3. Additional results of the bivariate regression analyses.

SOM 4. Scatter plots of the body mass (BM [g]) regressions based on Li1–Li9 (mm), Ar1–Ar4 (mm<sup>2</sup>), and Vo1–Vo3 (mm<sup>3</sup>) (Fig. 1).



SOM 2. Measurements of Li1 and Li2 (Fig. 1) for the Paleogene taxa included in this study.

species	Li1 (mm)	Li2 (mm)	specimen and reference
<i>'Baluchitherium grangeri'</i>	177.50	95.00	AMNH 26387 (Granger and Gregory, 1936)
<i>'Baluchitherium grangeri'</i>	201.50	123.50	AMNH 26973 (Granger and Gregory, 1936)
<i>'Baluchitherium grangeri'</i>	190.00	99.00	AMNH 5209 (Granger and Gregory, 1936)
<i>'Baluchitherium osborni'</i>	185.00	132.00	Osborn (1923, fig. 8-B1)
<i>Hyaenodon crucians</i>	13.04	14.02	FAM 75565 (Mellett, 1977)
<i>Hyaenodon horridus</i>	17.93	20.33	AM 9809 (Mellett, 1977)
<i>Eosimias</i> sp.	2.81	3.48	IVPP V11846 (Gebo et al., 2000)
<i>Messelobunodon</i> sp. nov.	4.30	—	Martinez and Sudre (1995, table 6)
<i>Messelobunodon</i> sp. nov.	4.40	—	Martinez and Sudre (1995, table 6)
<i>Doliochoerus quercyi</i> (Garouillas)	12.84	—	Martinez and Sudre (1995, table 6)
<i>Doliochoerus quercyi</i> (Pech Desse)	13.59	—	Martinez and Sudre (1995, table 6)
<i>Dacrytherium saturnini</i> (mean)	12.89	—	Martinez and Sudre (1995, table 7)
<i>Anoplotherium commune</i>	37.50	—	Martinez and Sudre (1995, table 6)
<i>Diplobune minor</i> (mean)	17.34	—	Martinez and Sudre (1995, table 7)
<i>Anthracotherium magnum</i>	40.50	—	Martinez and Sudre (1995, table 6)
<i>Anthracotherium</i> cf. <i>valdense</i>	49.60	—	Martinez and Sudre (1995, table 6)
<i>Caenomeryx</i> cf. <i>procommunis</i> (mean)	6.14	—	Martinez and Sudre (1995, table 7)
<i>Amphimeryx murinus</i>	5.30	—	Martinez and Sudre (1995, table 6)
<i>Lophiomeryx chalaniati</i> (mean)	16.38	—	Martinez and Sudre (1995, table 7)
<i>Iberomeryx minus</i>	7.94	—	Martinez and Sudre (1995, table 6)
<i>Bachitherium vireti</i> (mean)	8.49	—	Martinez and Sudre (1995, table 7)
<i>Bachitherium curtum</i> (mean)	9.44	—	Martinez and Sudre (1995, table 7)
<i>Bachitherium lavocati</i> (mean)	10.26	—	Martinez and Sudre (1995, table 7)
<i>Bachitherium</i> sp. nov. (mean)	13.51	—	Martinez and Sudre (1995, table 7)
<i>Prodremotherium elongatum</i> (mean)	14.58	—	Martinez and Sudre (1995, table 7)
<i>Dremotherium</i> sp. A (mean)	10.65	—	Martinez and Sudre (1995, table 7)
<i>Dremotherium</i> sp. B (mean)	12.83	—	Martinez and Sudre (1995, table 7)
<i>Gelocus communis</i>	10.12	—	Martinez and Sudre (1995, table 6)

SOM 3. Additional results of the bivariate regression analyses. LCI, lower limit of the 95% confidence interval. Li1–Li9, linear measurements of the astragalus (Fig. 1). MA, major axis. QMLE, quasi-maximum likelihood estimator (Sprugel 1983; Smith 1993a, b). RE, ratio estimator (Snowdon 1991; Smith 1993a, b). RMA, reduced major axis. SE, smearing estimate (Duan 1983; Smith 1993a, b). UCI, upper limit of the 95% confidence interval.

	RE	QMLE	SE	RMA Slope LCI	RMA Slope	RMA Slope UCI	MA Slope LCI	MA Slope	MA Slope UCI
log Li1	0.996	1.063	1.059	2.733	2.810	2.890	2.750	2.827	2.908
log Li2	1.405	1.110	1.107	2.772	2.875	2.982	2.802	2.905	3.015
log Li3	1.363	1.142	1.135	2.714	2.829	2.949	2.751	2.866	2.989
log Li4	1.294	1.102	1.094	2.659	2.755	2.855	2.686	2.781	2.883
log Li5	1.547	1.144	1.153	3.048	3.178	3.314	3.093	3.223	3.363
log Li6	1.614	1.397	1.475	2.798	2.994	3.204	2.902	3.100	3.324
log Li7	1.005	1.085	1.081	2.655	2.743	2.833	2.677	2.764	2.856
log Li8	1.532	1.177	1.193	2.731	2.860	2.996	2.778	2.907	3.047
log Li9	1.313	1.105	1.101	2.725	2.825	2.928	2.753	2.852	2.958
log Ar1	1.188	1.071	1.069	1.382	1.424	1.467	1.386	1.428	1.471
log Ar2	1.177	1.081	1.078	1.369	1.413	1.459	1.374	1.418	1.464
log Ar3	1.157	1.066	1.062	1.372	1.412	1.453	1.376	1.415	1.457
log Ar4	1.407	1.098	1.094	1.429	1.480	1.532	1.436	1.486	1.539
log Vo1	1.236	1.075	1.071	0.919	0.947	0.977	0.919	0.947	0.976
log Vo2	1.221	1.078	1.075	0.914	0.943	0.973	0.914	0.943	0.972
log Vo3	1.373	1.090	1.086	0.941	0.972	1.005	0.940	0.972	1.005

SOM 4. Scatter plots of the body mass (BM [g]) regressions based on Li1–Li9 (mm), Ar1–Ar4 (mm<sup>2</sup>), and Vo1–Vo3 (mm<sup>3</sup>) (Fig. 1). Black line indicates line of best fit; dashed lines represent the upper and lower 95% prediction limits.





