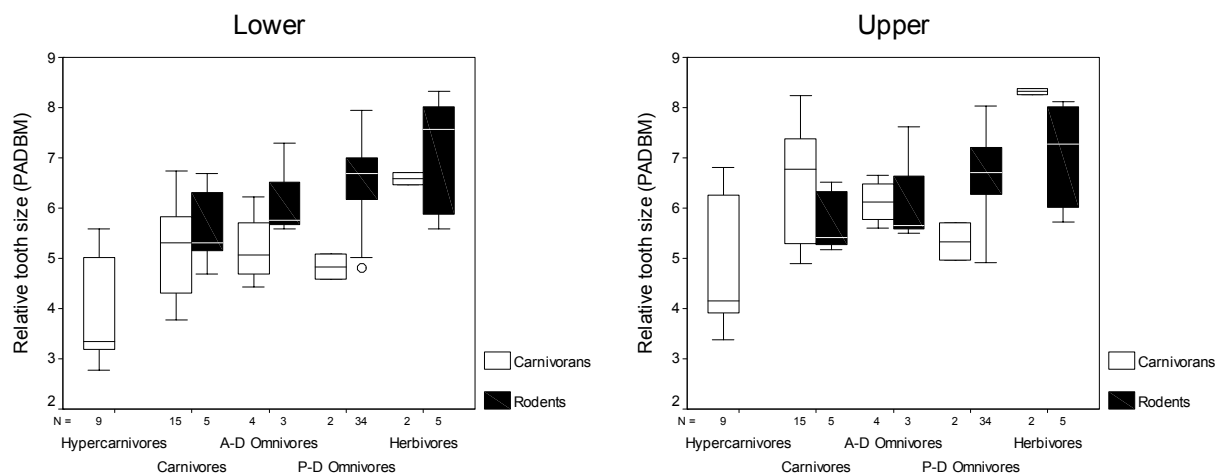


## SUPPLEMENTARY INFORMATION

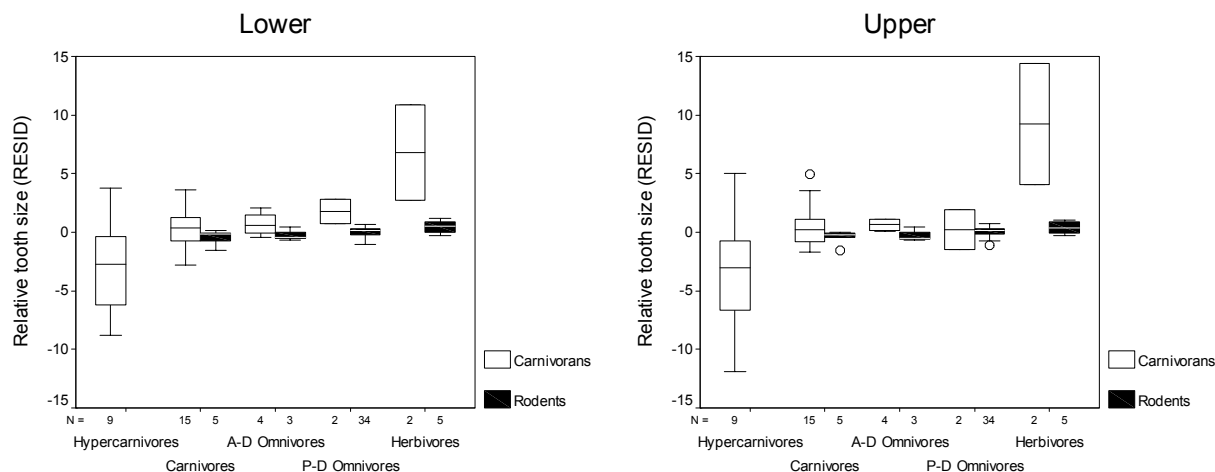
Supplementary information and data for Evans *et al.* (2006) *Nature*, High-level similarity of dentitions in carnivorans and rodents.

## Supplementary Figures

**Supplementary Figure 1.** Orientation patch count vs relative tooth size (PADBM; square root of planar tooth area divided by cube root of body mass). PADBM does not segregate species according to diet as well as dental complexity (Fig. 2). The relative tooth size ranges for carnivoran hypercarnivores and carnivores are very large and overlap most of the other dietary categories. For all boxplots in Supplementary Information, boxes enclose 50% of observations, the median is indicated with a bar, and whiskers denote range, other than outliers, which are indicated with open circles.



**Supplementary Figure 2.** Orientation patch count vs relative tooth size (RESID; residuals for reduced major axis regression of square root of planar tooth area vs cube root of body mass). Regressions were calculated for carnivorans and rodents and upper and lower tooth rows separately. The regressions for the rodents are much tighter than for the carnivorans, resulting in smaller residuals. Separation is better for the carnivorans than with PADBM, particularly with plant-dominated omnivores (*Ursus* species). Regression equations: carnivorans, lower:  $PASQ = 4.295 + 0.725 \cdot BMCB$ ; upper:  $PASQ = 4.992 + 1.306 \cdot BMCB$ ; rodents, lower:  $PASQ = 7.74 + -0.569 \cdot BMCB$ ; upper:  $PASQ = 7.556 + -0.452 \cdot BMCB$ .



## Supplementary Tables

Family/Subfamily: family is given for Carnivora, subfamily for Rodentia.

Diet: 1 – hypercarnivore  
 2 – carnivore or insectivore  
 3 – animal-dominated omnivore  
 4 – plant-dominated omnivore  
 5 – herbivore (i.e. stem-leaf feeder, including browsers and grazers)

OPC: orientation patch count

OPD: orientation patch diversity

OIC: orientation image compression

TPC: topographic patch count

TPD: topographic patch diversity

TIC: topographic image compression

l: lower tooth row

u: upper tooth row

O: orientation map

T (ZI=aX): topographic contour map where contour interval is a multiple (shown in column ‘a’) of the resolution in the X direction.

T(ZR/a): topographic contour map where the z range is divided into ‘a’ contours.

NO: number of orientations in an orientation map (4 or 8)

MPS: minimum patch size (3, 11 or 21)

a: factor for ZI=aX and ZR/a

JPEG80: image compression using JPEG algorithm at 80% quality

JPEG10: image compression using JPEG algorithm at 10% quality

PNG6: image compression using PNG algorithm at 6 compression

\*\*\*  $p \leq 0.001$

\*\*  $p < 0.01$

\*  $p < 0.05$

NS  $p \geq 0.05$

**Supplementary Table 1.** Dietary and general information for the carnivoran and rodent species included in the study; Nowak<sup>30</sup> was used as source of dietary information for all species, and Eisenberg<sup>31</sup> and Emmons<sup>32</sup> were extensively used as general references.

Species	Species abbrev.	Family/Subfamily	Diet	Diet references	(Body mass (kg)) <sup>(1/3)</sup>	No. teeth (l)	No. teeth (u)
CARNIVORA							
Acinonyx jubatus	AJ	Felidae	1	<sup>33, 34</sup>	3.684	1	2
Ailuropoda melanoleuca	AM	Ursidae	5	<sup>35</sup>	4.791	3	3
Ailurus fulgens	AF	Ailuridae	5	<sup>36</sup>	1.587	2	3
Alopex lagopus	AL	Canidae	2	<sup>37</sup>	1.504	3	3
Canis aureus	CA	Canidae	2	<sup>34</sup>	1.922	3	3
Canis lupus	CL	Canidae	1	<sup>34, 38</sup>	3.497	2	3

<i>Crocota crocuta</i>	CC	Hyaenidae	2	<sup>34</sup>	3.979	1	2
<i>Felis silvestris</i>	FS	Felidae	1		1.617	1	2
<i>Galerella sanguinea</i>	GS	Herpestidae	2	<sup>39</sup>	0.819	2	3
<i>Genetta genetta</i>	GE	Viverridae	2	<sup>40-42</sup>	1.241	2	3
<i>Gulo gulo</i>	GU	Mustelidae	2	<sup>34, 42, 43</sup>	2.305	2	2
<i>Herpestes ichneumon</i>	HI	Herpestidae	2		1.418	2	3
<i>Lutra lutra</i>	LU	Mustelidae	2		2.041	2	2
<i>Lynx lynx</i>	LY	Felidae	1	<sup>44</sup>	2.571	1	2
<i>Martes foina</i>	MF	Mustelidae	2		1.077	2	2
<i>Martes martes</i>	MA	Mustelidae	2		1.091	2	2
<i>Meles meles</i>	ME	Mustelidae	3	<sup>34, 42</sup>	2.283	2	2
<i>Mustela erminea</i>	MER	Mustelidae	2	<sup>45</sup>	0.448	2	2
<i>Mustela eversmannii</i>	MEV	Mustelidae	1		1.26	2	2
<i>Mustela lutreola</i>	MLU	Mustelidae	2	<sup>46</sup>	0.834	2	2
<i>Mustela nivalis</i>	MNI	Mustelidae	1	<sup>47</sup>	0.448	2	2
<i>Mustela putorius</i>	MP	Mustelidae	2		1.01	2	2
<i>Otocyon megalotis</i>	OM	Canidae	3	<sup>48</sup>	1.607	4	4
<i>Panthera leo</i>	PLE	Felidae	1	<sup>34, 49</sup>	5.572	1	2
<i>Paradoxurus hermaphroditus</i>	PH	Viverridae	3		1.442	2	3
<i>Procyon lotor</i>	PR	Procyonidae	3	<sup>34, 50</sup>	1.852	2	3
<i>Ursus americanus</i>	UAM	Ursidae	4	<sup>34, 51</sup>	4.481	3	3
<i>Ursus arctos</i>	UAR	Ursidae	4	<sup>34</sup>	5.143	3	3
<i>Ursus maritimus</i>	UM	Ursidae	1	<sup>34, 52</sup>	7.259	3	3
<i>Viverra zibetha</i>	VZ	Viverridae	2	<sup>34</sup>	1.866	2	3
<i>Vormela peregusna</i>	VP	Mustelidae	1	<sup>53</sup>	0.888	2	2
<i>Vulpes vulpes</i>	VV	Canidae	2	<sup>34, 54</sup>	1.776	3	3
RODENTIA							
<i>Aethomys hindei</i>	ah	Murinae	4	<sup>55, 56</sup>	0.464	3	3
<i>Akodon serrensis</i>	as	Sigmodontinae	3		0.327	3	3
<i>Anisomys imitator</i>	ai	Murinae	4	<sup>57, 58</sup>	0.785	3	3
<i>Apodemus agrarius</i>	aa	Murinae	4	<sup>59</sup>	0.271	3	3
<i>Arvicanthis niloticus</i>	an	Murinae	4	<sup>55, 59</sup>	0.448	3	3
<i>Bandicota indica</i>	bi	Murinae	4		0.849	3	3
<i>Berylmys bowersi</i>	bb	Murinae	4	<sup>60, 61</sup>	0.669	3	3
<i>Crateromys schadenbergi</i>	cs	Murinae	4			3	3
<i>Dasymys sp.</i>	das	Murinae	4		0.464	3	3
<i>Geoxus valdivianus</i>	gv	Sigmodontinae	2	<sup>62</sup>	0.28	3	3
<i>Grammomys dolichurus</i>	gd	Murinae	4	<sup>63, 64</sup>	0.368	3	3
<i>Grammomys rutilans</i>	gr	Murinae	4	<sup>65</sup>	0.431	3	3
<i>Holochilus brasiliensis</i>	hb	Sigmodontinae	4	<sup>62, 66</sup>	0.531	3	3
<i>Hybomys univittatus</i>	hu	Murinae	4	<sup>55, 63, 67</sup>	0.368	3	3
<i>Hydromys chrysogaster</i>	hc	Murinae	2	<sup>58, 59, 68, 69</sup>	0.871	2	2
<i>Hylomyscus stella</i>	hs	Murinae	4	<sup>56, 70</sup>	0.271	3	3
<i>Hyomys goliath</i>	hg	Murinae	5	<sup>57, 58</sup>	1	3	3
<i>Ichthyomys stolzmanni</i>	is	Sigmodontinae	2			3	3
<i>Lemniscomys striatus</i>	lst	Murinae	4	<sup>55, 56</sup>	0.342	3	3
<i>Leopoldamys sabanus</i>	lsa	Murinae	4	<sup>61, 63</sup>	0.63	3	3
<i>Leptomys elegans</i>	le	Murinae	2	<sup>58</sup>	0.41	3	3
<i>Lophuromys mediceaudatus</i>	lm	Murinae	2		0.422	3	3
<i>Malacomys longipes</i>	mlo	Murinae	3	<sup>56, 71</sup>	0.464	3	3
<i>Mallomys rothschildi</i>	mr	Murinae	5	<sup>57, 58</sup>	1	3	3
<i>Mastomys natalensis</i>	mn	Murinae	4	<sup>55, 63, 64, 67, 72</sup>	0.391	3	3

Melomys levipipes	ml	Murinae	4	<sup>57</sup>	0.479	3	3
Micromys minutus	mi	Murinae	4	<sup>59</sup>	0.215	3	3
Mus musculus	mu	Murinae	4	<sup>59, 73</sup>	0.215	3	3
Nectomys squamipes	ns	Sigmodontinae	3	<sup>62, 74, 75</sup>	0.604	3	3
Notomys mitchellii	nm	Murinae	4	<sup>69, 76</sup>	0.368	3	3
Oenomys hypoxanthus	oh	Murinae	4	<sup>55, 56, 67</sup>	0.448	3	3
Otomys denti	od	Otomyinae	4	<sup>55</sup>	0.543	3	3
Otomys irroratus	oi	Otomyinae	4	<sup>55, 64, 77</sup>	0.519	3	3
Oxymycterus sp	ox	Sigmodontinae	2		0.431	3	3
Parotomys littledalei	pli	Otomyinae	4	<sup>64</sup>	0.507	3	3
Pelomys campanae	pc	Murinae	5		0.464	3	3
Peromyscus maniculatus	pm	Sigmodontinae	4	<sup>78, 79</sup>	0.271	3	3
Phyllotis sp	phy	Sigmodontinae	4		0.412	3	3
Pogonomys sp	pog	Murinae	4		0.391	3	3
Praomys jacksoni	pj	Murinae	4	<sup>55, 70</sup>	0.342	3	3
Rattus leucopus	rl	Murinae	4	<sup>69</sup>	0.493	3	3
Reithrodon auritus	ra	Sigmodontinae	5	<sup>62, 66</sup>	0.431	3	3
Reithrodontomys mexicanus	rm	Sigmodontinae	5	<sup>59, 73</sup>	0.271	3	3
Rhodomys pumilio	rp	Murinae	4	<sup>55, 64, 72</sup>	0.342	3	3
Sigmodon hispidus	sh	Sigmodontinae	4	<sup>59, 73, 80</sup>	0.585	3	3
Stochomys longicaudatus	sl	Murinae	4	<sup>55, 56, 81</sup>	0.412	3	3
Sundamys muelleri	sm	Murinae	4	<sup>60, 61</sup>	0.669	3	3
Uromys caudimaculatus	uc	Murinae	4	<sup>57, 68, 69</sup>	0.819	3	3
Zygodontomys brevicauda	zb	Sigmodontinae	4	<sup>31, 82</sup>	0.412	3	3

**Supplementary Table 2.** Orientation patch count (OPC) and orientation patch diversity (OPD) results for orientation maps with 8 orientations and minimum patch size 3. Square root of planar tooth area, relative tooth size (PADBM; square root of planar tooth area divided by cube root of body mass (kg)) and residuals of reduced major axis regression of PTASQ vs BMCB for lower (l) and upper (u) tooth rows. Body mass data was not available for *Crateromys schadenbergi* and *Ichthyomys stolzmanni*.

Species abbrev.	OPC (l)	OPC (u)	OPD (l)	OPD (u)	(Planar tooth area) <sup>^(1/2)</sup> (l)	(Planar tooth area) <sup>^(1/2)</sup> (u)	Relative tooth size (l)	Relative tooth size (u)	Tooth size residual (l)	Tooth size residual (u)
CARNIVORA										
AJ	40	53	7.399	9.837	10.256	12.451	2.784	3.38	-6.293	-7.247
AM	257	342	167.3	212.7	32.16	39.608	6.712	8.266	10.855	14.382
AF	195	270	124.6	155.7	10.256	13.314	6.461	8.387	2.713	4.083
AL	95	174	34.06	54.79	8.817	11.151	5.864	7.416	1.633	2.338
CA	125	185	52.45	64.29	12.57	15.831	6.54	8.237	3.59	4.93
CL	97	137	22.41	49.42	19.527	23.817	5.585	6.811	3.783	5.055
CC	61	72	8.949	12.71	15.044	19.48	3.781	4.896	-2.773	-1.69
FS	37	55	8	12.63	4.964	6.334	3.069	3.917	-2.708	-3.045
GS	110	143	37.92	46.68	4.148	5.724	5.063	6.986	-0.096	0.327
GE	140	144	42.61	53.25	4.699	6.188	3.787	4.988	-1.355	-1.312
GU	54	124	17.11	27.95	12.23	13.618	5.307	5.909	1.606	0.807
HI	101	149	40.72	58.89	6.196	8.461	4.37	5.968	-0.619	0.077
LU	91	150	27.18	43.35	8.642	10.697	4.234	5.242	-0.849	-0.797
LY	40	58	8.76	14.29	8.607	10.686	3.347	4.156	-3.163	-3.457
MF	79	145	27.71	32.36	6.247	7.904	5.799	7.338	0.894	1.22
MA	77	142	27.3	32.36	6.025	7.689	5.52	7.045	0.612	0.934

ME	121	195	55.18	59.27	10.099	12.799	4.424	5.606	-0.432	0.096
MER	39	76	17.07	21.39	3.018	3.505	6.735	7.821	0.368	-0.039
MEV	48	91	15.58	24.86	4.98	5.63	3.953	4.469	-1.156	-1.966
MLU	68	126	22.77	35	4.729	5.655	5.67	6.781	0.421	0.185
MNI	54	90	18.74	25.61	2.285	2.83	5.099	6.316	-0.365	-0.713
MP	55	99	20.06	22.05	4.78	5.387	4.733	5.334	-0.283	-0.961
OM	162	184	115.6	135.5	7.953	9.553	4.949	5.944	0.325	0.224
PLE	37	53	8.153	9.967	18.42	22.457	3.306	4.03	-6.238	-6.666
PH	115	115	47.75	47.64	8.981	9.593	6.227	6.651	2.061	1.087
PR	153	188	85.24	95.95	9.582	11.68	5.174	6.308	0.903	1.13
UAM	192	150	117.1	57.68	22.781	25.566	5.083	5.705	2.807	1.888
UAR	179	170	109.6	119.9	23.586	25.496	4.586	4.958	0.773	-1.483
UM	201	135	149.8	83.34	23.122	25.619	3.185	3.529	-8.782	-11.925
VZ	162	206	59.99	80.4	7.549	9.812	4.045	5.257	-1.193	-0.811
VP	56	113	22.51	29.61	4.46	5.55	5.023	6.251	-0.079	-0.189
VV	119	184	45.33	60.55	11.393	13.708	6.416	7.719	3.04	3.537
RODENTIA										
ah	225	231	124.8	111.8	3.036	3.063	6.54	6.598	0.012	0.008
as	113	129	66.11	65.93	2.386	2.491	7.295	7.615	0.423	0.472
ai	231	280	128.2	136.3	4.825	4.767	6.145	6.072	-0.684	-0.713
aa	173	173	89.1	92.3	1.706	1.694	6.286	6.241	0.174	0.095
an	150	182	87.88	105.7	2.95	3.033	6.584	6.767	0.05	0.099
bi	191	237	64.57	51.18	5.625	5.554	6.621	6.538	-0.382	-0.412
bb	193	209	104.6	98.92	4.359	4.464	6.511	6.668	-0.254	-0.142
cs	230	285	134.7	200.7	7.756	7.42				
das	233	309	94.12	156.2	3.689	3.557	7.948	7.663	0.665	0.502
gv	184	191	100.9	89.6	1.444	1.452	5.153	5.181	-0.156	-0.213
gd	229	265	157	144.6	2.013	2.034	5.464	5.521	-0.27	-0.297
gr	220	273	90.47	94.36	2.706	2.693	6.279	6.249	-0.061	-0.111
hb	287	285	169.4	104.9	3.57	3.536	6.719	6.655	0.026	-0.027
hu	220	233	131.1	138.7	2.519	2.485	6.838	6.745	0.236	0.154
hc	122	126	56.98	51.82	4.63	4.59	5.318	5.272	-1.541	-1.536
hs	190	177	114.1	105.8	1.819	1.829	6.701	6.738	0.287	0.23
hg	277	309	93.53	104.9	8.329	8.114	8.329	8.114	1.157	1.01
is	163	182	83.08	75.25	2.154	2.237				
lst	167	218	104.3	137.2	2.365	2.419	6.916	7.073	0.287	0.287
lsa	217	229	131.5	96.7	4.407	4.544	6.995	7.212	0.099	0.236
le	149	134	82.57	70.04	2.741	2.675	6.682	6.521	0.135	0.028
lm	167	256	81.7	144.4	1.977	2.282	4.687	5.412	-0.719	-0.452
mlo	180	206	132.1	110.7	2.589	2.551	5.578	5.496	-0.435	-0.504
mr	241	259	144.6	133.8	8.025	8.023	8.025	8.023	0.854	0.919
mn	152	167	80.7	100.2	2.138	2.454	5.462	6.268	-0.323	-0.052
ml	177	189	59.09	61.43	3.427	3.528	7.152	7.364	0.287	0.36
mi	164	162	105.7	95.84	1.318	1.381	6.117	6.412	0.219	0.206
mu	167	181	106.5	98.06	1.447	1.57	6.714	7.288	0.348	0.395
ns	226	253	120.4	123.6	3.475	3.418	5.757	5.662	-0.629	-0.691
nm	181	203	97.28	88.88	2.78	2.88	7.547	7.818	0.498	0.549
oh	187	190	41.32	73.17	3.111	3.135	6.942	6.995	0.211	0.201
od	146	197	56.79	53.18	3.813	3.944	7.023	7.265	0.179	0.294
oi	133	167	50.78	42.49	3.896	4.176	7.504	8.043	0.446	0.705
ox	153	130	100.9	84.12	2.723	2.727	6.319	6.33	-0.044	-0.076
pli	173	212	57.82	73.94	3.668	3.672	7.242	7.248	0.316	0.296
pc	189	196	115	113.4	2.725	2.795	5.872	6.022	-0.299	-0.259

pm	200	201	138.5	82.55	1.702	1.724	6.271	6.352	0.17	0.126
phy	214	181	113.3	94.74	2.367	2.301	5.743	5.584	-0.254	-0.36
pog	246	293	155.8	212	2.611	2.677	6.669	6.837	0.149	0.171
pj	177	162	100.7	88.25	2.111	2.148	6.172	6.281	0.032	0.016
rl	239	236	129.4	120.8	3.346	3.411	6.784	6.915	0.097	0.136
ra	222	247	133.6	104.5	3.263	3.139	7.573	7.284	0.497	0.335
rm	256	276	120.3	107.1	1.515	1.552	5.581	5.716	-0.017	-0.047
rp	180	185	105.4	127.1	2.401	2.454	7.021	7.176	0.323	0.323
sh	267	276	122.7	146.3	2.935	2.871	5.019	4.909	-1.023	-1.095
sl	265	266	164.1	142.3	3.129	3.105	7.593	7.535	0.508	0.444
sm	203	245	101.4	122.1	3.94	4.005	5.886	5.983	-0.673	-0.601
uc	184	197	85.72	79.52	5.492	5.348	6.703	6.527	-0.281	-0.391
zb	178	202	111.7	102	1.982	2.042	4.809	4.955	-0.639	-0.619

**Supplementary Table 3.** Results of Kruskal-Wallis tests for carnivorans. Kruskal-Wallis tests were used as a normal distribution is not assumed.

Map type	NO	MPS	OPC (l)		OPC (u)		OPD (l)		OPD (u)	
O	8	3	0	***	0	***	0	***	0	***
O	8	11	0	***	0	***	0	***	0.001	***
O	8	21	0	***	0.004	**	0	***	0.001	***
O	4	3	0	***	0	***	0	***	0.002	**
O	4	11	0	***	0.002	**	0.001	***	0.006	**

Map type	a	MPS	TPC (l)		TPC (u)		TPD (l)		TPD (u)	
T (ZI=aX)	2	3	0	***	0.009	**	0.004	**	0.049	*
T (ZI=aX)	4	3	0.024	*	0.006	**	0.01	*	0.003	**
T (ZR/a)	5	3	0.001	***	0.005	**	0.199	NS	0.122	NS
T (ZR/a)	10	3	0.01	*	0.011	*	0.265	NS	0.041	*

Map type	NO	JPG80		OIC (l)		PNG6		JPG80		OIC (u)		PNG6	
		0.001	***	0.005	**	0.001	***	0.001	***	0.003	**	0.001	***
O	8	0.001	***	0.005	**	0.001	***	0.001	***	0.003	**	0.001	***

Map type	a	TIC (l)		TIC (u)	
		JPG80	JPG80	JPG80	JPG80
T (ZI=aX)	1	0.005	**	0.02	*
T (ZI=aX)	2	0.001	**	0.005	**
T (ZI=aX)	4	0.003	**	0.002	**
T (ZR/a)	5	0.016	*	0.01	*
T (ZR/a)	10	0.017	*	0.006	**
T (ZR/a)	20	0.006	**	0.03	*

**Supplementary Table 4.** Results of Kruskal-Wallis tests for rodents.

Map type	NO	MPS	OPC (l)		OPC (u)		OPD (l)		OPD (u)	
O	8	3	0.003	**	0.038	*	0.103	NS	0.303	NS
O	8	11	0.004	**	0.023	*	0.114	NS	0.291	NS
O	8	21	0.325	NS	0.814	NS	0.109	NS	0.266	NS
O	4	3	0	***	0.011	*	0.264	NS	0.275	NS

O 4 11 0.033 \* 0.085 NS 0.351 NS 0.341 NS

Map type	a	MPS	TPC (l)		TPC (u)		TPD (l)		TPD (u)	
T (ZI=aX)	2	3	0.829	NS	0.325	NS	0.906	NS	0.525	NS
T (ZI=aX)	4	3	0.729	NS	0.696	NS	0.789	NS	0.213	NS
T (ZR/a)	5	3	0.391	NS	0.19	NS	0.983	NS	0.607	NS
T (ZR/a)	10	3	0.132	NS	0.881	NS	0.652	NS	0.94	NS

Map type	NO	JPEG80		OIC (l)		PNG6		JPEG80		OIC (u)		JPEG10		PNG6	
O	8	0.742	NS	0.151	NS	0.128	NS	0.67	NS	0.892	NS	0.128	NS		

Map type	a	TIC (l)		TIC (u)	
		JPEG80		JPEG80	
T (ZI=aX)	1	0.955	NS	0.949	NS
T (ZI=aX)	2	0.948	NS	0.969	NS
T (ZI=aX)	4	0.931	NS	0.985	NS
T (ZR/a)	5	0.702	NS	0.999	NS
T (ZR/a)	10	0.784	NS	0.95	NS
T (ZR/a)	20	0.773	NS	0.981	NS

**Supplementary Table 5.** Results of Kruskal-Wallis tests for murines.

Map type	NO	MPS	OPC (l)		OPC (u)		OPD (l)		OPD (u)	
O	8	3	0.006	**	0.359	NS	0.052	NS	0.802	NS
O	8	11	0.007	**	0.517	NS	0.049	*	0.794	NS
O	8	21	0.165	NS	0.801	NS	0.075	NS	0.777	NS
O	4	3	0.019	*	0.275	NS	0.059	NS	0.534	NS
O	4	11	0.108	NS	0.472	NS	0.104	NS	0.613	NS

Map type	a	MPS	TPC (l)		TPC (u)		TPD (l)		TPD (u)	
T (ZI=aX)	2	3	0.422	NS	0.053	NS	0.308	NS	0.365	NS
T (ZI=aX)	4	3	0.497	NS	0.119	NS	0.689	NS	0.037	*
T (ZR/a)	5	3	0.397	NS	0.051	NS	0.891	NS	0.758	NS
T (ZR/a)	10	3	0.188	NS	0.788	NS	0.507	NS	0.926	NS

**Supplementary Table 6.** Results of Kruskal-Wallis tests for sigmodontines.

Map type	NO	MPS	OPC (l)		OPC (u)		OPD (l)		OPD (u)	
O	8	3	0.232	NS	0.304	NS	0.105	NS	0.421	NS
O	8	11	0.103	NS	0.034	*	0.059	NS	0.421	NS
O	8	21	0.856	NS	0.96	NS	0.057	NS	0.419	NS
O	4	3	0.053	NS	0.134	NS	0.233	NS	0.419	NS
O	4	11	0.056	NS	0.457	NS	0.245	NS	0.434	NS

Map type	a	MPS	TPC (l)		TPC (u)		TPD (l)		TPD (u)	
T (ZI=aX)	2	3	0.958	NS	0.523	NS	0.468	NS	0.11	NS
T (ZI=aX)	4	3	0.991	NS	0.96	NS	0.746	NS	0.144	NS
T (ZR/a)	5	3	0.828	NS	0.25	NS	0.979	NS	0.183	NS
T (ZR/a)	10	3	0.594	NS	0.488	NS	0.505	NS	0.916	NS

**Supplementary Table 7.** Results of Kruskal-Wallis tests for measures of relative tooth size. PALDBM, square root of planar tooth area divided by cube root of body mass; RESID, residuals for a reduced major axis regression of (square root of planar tooth area vs cube root of body mass).

Variable	Carnivorans		Rodents	
PADBM (l)	0.011	*	0.087	NS
PADBM (u)	0.003	**	0.061	NS
RESID (l)	0.012	*	0.099	NS
RESID (u)	0.006	**	0.093	NS

**Supplementary Table 8.** Results of Mann-Whitney U tests for comparisons between carnivorans and rodents in the same dietary category for the different dental complexity measures.

Variable	Diet	Orientation				Topographic			
		Lower		Upper		Lower		Upper	
Patch Count	2	0.001	***	0.439	NS	0	***	0.001	***
	3	0.637	NS	0.408	NS	0.17	NS	0.4	NS
	4	0.764	NS	0.028	*	0.092	NS	0.58	NS
	5	1	NS	0.377	NS	0.185	NS	0.092	NS
Patch Diversity	2	0	***	0.003	***	0	***	0	***
	3	0.24	NS	0.637	NS	0.115	NS	0.056	NS
	4	0.63	NS	0.592	NS	0.671	NS	0.918	NS
	5	0.377	NS	0.095	NS	0.185	NS	0.378	NS
Image Compression	2	0	***	0	***	0	***	0	***
	3	0.058	NS	0.058	NS	0.224	NS	0.111	NS
	4	0.765	NS	0.239	NS	0.813	NS	0.363	NS
	5	0.573	NS	0.095	NS	1	NS	0.093	NS

### Supplementary References

30. Nowak, R. *Walker's Mammals of the World* (Johns Hopkins University Press, Baltimore, 1999).
31. Eisenberg, J. F. *Mammals of the Neotropics: The Northern Neotropics. Vol 1* (The University of Chicago Press, Chicago, 1989).
32. Emmons, L. H. *Neotropical Rainforest Mammals: A field guide* (The University of Chicago Press, Chicago, 1990).
33. Krausman, P. R. & Morales, S. M. *Acinonyx jubatus*. *Mammalian Species* 771, 1-6 (2005).
34. Van Valkenburgh, B. in *Carnivore Behavior, Ecology, and Evolution* (ed. Gittleman, J. L.) 410-436 (Cornell University Press, Ithaca, 1989).
35. Chorn, J. & Hoffmann, R. S. *Ailuropoda melanoleuca*. *Mammalian Species* 110, 1-6 (1978).
36. Roberts, M. S. & Gittleman, J. L. *Ailurus fulgens*. *Mammalian Species* 222, 1-8 (1984).
37. Audet, A. M., Robbins, C. B. & Larivière, S. *Alopex lagopus*. *Mammalian Species* 713, 1-10 (2002).
38. Mech, L. D. *Canis lupus*. *Mammalian Species* 37, 1-6 (1974).
39. Fenton, M. B. *et al.* Bats and the loss of tree canopy in African woodlands. *Conservation Biology* 12, 399-407 (1998).
40. Larivière, S. & Calzada, J. *Genetta genetta*. *Mammalian Species* 680, 1-6 (2001).



41. Virgós, E., Llorente, M. & Cortés, Y. Geographical variation in genet (*Genetta genetta* L.) diet: a literature review. *Mammal Review* 29, 119-128 (1999).
42. Popowics, T. E. Postcanine dental form in the Mustelidae and Viverridae (Carnivora: Mammalia). *Journal of Morphology* 256, 322-341 (2003).
43. Pasitschniak-Arts, M. & Larivière, S. *Gulo gulo*. *Mammalian Species* 499, 1-10 (1995).
44. Tumilson, R. & McDaniel, V. R. Morphology, replacement mechanisms, and functional conservation in dental replacement patterns of the bobcat (*Felis rufus*). *Journal of Mammalogy* 65, 111-117 (1984).
45. King, S. J. *et al.* Dental senescence in a long-lived primate links infant survival to rainfall. *Proceedings of the National Academy of Sciences, USA* 102, 16579-16583 (2005).
46. Youngman, P. M. *Mustela lutreola*. *Mammalian Species* 362, 1-3 (1990).
47. Sheffield, S. R. & King, C. M. *Mustela nivalis*. *Mammalian Species* 454, 1-10 (1994).
48. Clark, H. O. *Otocyon megalotis*. *Mammalian Species* 766, 1-5 (2005).
49. Haas, S. K., Hayssen, V. & Krausman, P. R. *Panthera leo*. *Mammalian Species* 762, 1-11 (2005).
50. Lotze, J.-H. & Anderson, S. *Procyon lotor*. *Mammalian Species* 119, 1-8 (1979).
51. Larivière, S. *Ursus americanus*. *Mammalian Species* 647, 1-11 (2001).
52. Demaster, D. P. & Stirling, I. *Ursus maritimus*. *Mammalian Species* 145, 1-7 (1981).
53. Gorsuch, W. A. & Larivière, S. *Vormela peregusna*. *Mammalian Species* 779, 1-5 (2005).
54. Larivière, S. & Pasitschniak-Arts, M. *Vulpes vulpes*. *Mammalian Species* 537, 1-11 (1996).
55. Delany, M. J. *The Rodents of Uganda* (Trustees of the British Museum (Natural History), London, 1975).
56. Happold, D. C. D. *The Mammals of Nigeria* (Clarendon Press, Oxford, 1987).
57. Menzies, J. I. & Dennis, E. *Handbook of New Guinea Rodents. Handbook No. 6* (Wau Ecology Institute, Wau, 1979).
58. Rich, T. H. *et al.* A tribosphenic mammal from the Mesozoic of Australia. *Science* 278, 1438-1447 (1997).
59. Hutchins, M., Kleiman, D. G., Geist, V. & McDade, M. C. (eds.) *Grzimek's Animal Life Encyclopedia, 2nd edition. Vol 16, Mammals* (Gale Group, Farmington Hills, MI, 2003).
60. Archer, M. *et al.* The evolutionary history and diversity of Australian mammals. *Australian Mammalogy* 21, 1-45 (1999).
61. Lim, B. L. Breeding pattern, food habits and parasitic infestation of bats in Gunong Brinchang. *Mayalan Nature Journal* 26, 6-13 (1973).
62. Redford, K. H. & Eisenberg, J. F. *Mammals of the Neotropics: The Southern Cone. Vol 2* (The University of Chicago Press, Chicago, 1989).
63. Delany, M. J. & Neal, B. R. A review of the Muridae (Order Rodentia) of Uganda. *Bulletin of The British Museum (Natural History) Zoology* 13, 297-355 (1966).
64. Skinner, J. D. *The mammals of the southern African subregion* (University of Pretoria, 1990).
65. Rosevear, D. R. *The Rodents of West Africa* (The British Museum (Natural History), London, 1969).
66. Barlow, K. E., Jones, G. & Barratt, E. M. Can skull morphology be used to predict ecological relationships between bat species? A test using two cryptic species of pipistrelle. *Proceedings of the Royal Society of London, Series B* 264, 1695-1700 (1997).
67. Kingdon, J. *East African Mammals: An Atlas of Evolution in Africa. Vol IIB* (Academic Press, London, 1974).
68. Anon. Queensland Govt. Dept. of Environment "Tropical Topics" newsletter, No. 46 (1998).
69. Strahan, R. (ed.) *The Australian Museum Complete Book of Australian Mammals* (Angus & Robertson Publishers, Sydney, 1983).
70. Chapman, C. A. & Chapman, L. J. Forest restoration in abandoned agricultural land: a case study from east Africa. *Conservation Biology* 13, 1301-1311 (1999).

71. Valeri, C. J., Cole, T. M. I., Lele, S. & Richtsmeier, J. T. Capturing data from three-dimensional surfaces using fuzzy landmarks. *American Journal of Physical Anthropology* 107, 113-124 (1998).
72. Smithers, R. H. N. *The Mammals of Botswana* (Mardon Printers Ltd., Salisbury, Rhodesia, 1971).
73. Shellis, R. P., Beynon, A. D., Reid, D. J. & Hiiemae, K. M. Variations in molar enamel thickness among primates. *Journal of Human Evolution* 35, 507-522 (1998).
74. Ernest, K. A. *Nectomys squamipes*. *Mammalian Species* 265, 1-5 (1986).
75. Ernest, K. A. & Mares, M. A. Ecology of *Nectomys squamipes*, the neotropical Water rat, in central Brazil: home range, habitat selection, reproduction and behavior. *Journal of Zoology* 210, 599-612 (1986).
76. Strahan, R. (ed.) *The Mammals of Australia. The National Photographic Index of Australian Wildlife* (Reed New Holland, Sydney, NSW, 1998).
77. Bronner, G., Gordon, S. & Meester, J. *Otomys irroratus*. *Mammalian Species* 308, 1-6 (1988).
78. Linzey, D. W. & Linzey, A. V. Notes on food of small mammals from Great Smoky Mountains National Park, Tennessee-North Carolina. *Journal of the Elisha Mitchell Scientific Society* 89, 6-14 (1973).
79. Banfield, A. W. F. *The Mammals of Canada* (University of Toronto Press, Toronto, 1974).
80. Voss, R. S. A revision of the South American species of *Sigmodon* (Mammalia: Muridae) with notes on their natural history and biogeography. *American Museum Novitates* 3050, 1-56 (1992).
81. John, F. A. & Purvis, A. Body size, diet and population density in Afrotropical forest mammals: a comparison with neotropical species. *Journal of Animal Ecology* 66, 98-112 (1997).
82. Voss, R. S. An introduction to the Neotropical murid rodent genus *Zygodontomys*. *Bulletin of the American Museum of Natural History* 210, 1-113 (1991).