Supplementary Information

Fossorial adaptations in African mole-rats (Bathyergidae) and the unique appendicular phenotype of naked mole-rats

Germán Montoya-Sanhueza, Gabriel Šaffa, Radim Šumbera, Anusuya Chinsamy, Jennifer U. M. Jarvis, Nigel C. Bennett

Contents:

Abbreviations	
Deltoid tuberosity	**DT**
Deltopectoral crest	**DC**
Distal fusion of tibia-fibula	**DFTFi**
Epicondyles (Humerus)	**EH**
Fibula	**Fi**
Femoral head	**FH**
Humerus	**H**
Humeral head	**HH**
Index of fossorial ability	**IFA**
Grater trochanter	**GT**
Grater tubercle	**GTu**
Lesser trochanter	**LT**
Olecranon process	**OP**
Relative position of DT	**RDT**
Third trochanter	**TT**
Tibia	**T**
Tibio-fibular junction index	**TJI**
Trochlear notch	**TN**

SUPPLEMENTARY TABLES

Supplementary Table 1. Total number of bathyergid individuals analyzed in this study (*n* = 382). Data includes ID code, sex, institution of origin (IO), ontogenetic stage (OS), limb bones and bone superstructures. Outgroup specimens (*n* = 19) from Petromuridae and Hystricidae were also included. The bones analyzed are humerus (H, *n* = 380), ulna (U, *n* = 376), femur (F, *n* = 323), tibia (T, *n* = 312), and fibula (Fi, *n* = 312). Presence/absence of bone superstructures including a projected deltoid tuberosity (DT), olecranon process (OP), third trochanter (TT), and distal tibio-fibular fusion (DFTFi). Some specimens are from captivity (ca). Scanned bones are indicated with an asterisk (*). Sample size for each species: *Bathyergus suillus* (*n* = 78); *B. janetta* (*n* = 6); *Heliophobius argenteocinereus* (*n* = 38); *Georychus capensis* (*n* = 51); *Cryptomys hottentotus* (*n* = 53); *Fukomys mechowii* (*n* = 32); *Fukomys damarensis* (*n* = 48); *Heterocephalus glaber* (*n* = 76); *Hystrix africaeaustralis* (*n* = 18); *Petromus typicus* (*n* = 1). OS: newborn (0), pup (1), juvenile (2), and adult (3). Sex: males (M) and females (F). Institutions: Kalahari Mole-Rat Project, Kalahari Research Centre (KRC); Department of Biological Sciences, University of Cape Town (UCT); Mammal Research Institute, Department of Zoology and Entomology, University of Pretoria (UP); Department of Zoology, Faculty of Science, University of South Bohemia (USB); Paläontologisches Institut und Museum, Universität Zürich (UZ).

Species	ID Code	Sex	Age	OS	IO	H	U	F	T-Fi	DT	OP	TT	DFTFi
Bathyergus suillus	219	F		2	UCT	H	U	F	T-Fi	Yes	Yes	Yes	Yes
Bathyergus suillus	307	F		2	UCT	H	U	F	T-Fi	Yes	Yes	Yes	Yes
Bathyergus suillus	314	F		3	UCT	H	U	F	T-Fi	Yes	Yes	Yes	Yes
Bathyergus suillus	333	F		2	UCT	H	U	F	T-Fi	Yes	Yes	Yes	Yes
Bathyergus suillus	365	F		3	UCT	H	U	F	T-Fi	Yes	Yes	Yes	Yes
Bathyergus suillus	366	F		3	UCT	H	U	F	T-Fi	Yes	Yes	Yes	Yes
Bathyergus suillus	377	F		3	UCT	H	U	F	T-Fi	Yes	Yes	Yes	Yes
Bathyergus suillus	717	F		3	UCT	H	U	F	T-Fi	Yes	Yes	Yes	Yes
Bathyergus suillus	721	F		3	UCT	H	U	F	T-Fi	Yes	Yes	Yes	Yes
Bathyergus suillus	911	F		3	UCT	H	U	F	T-Fi	Yes	Yes	Yes	Yes
Bathyergus suillus	913	F		3	UCT	H	U	F	T-Fi	Yes	Yes	Yes	Yes
Bathyergus suillus	938	F		3	UCT	H	U	F	T-Fi	Yes	Yes	Yes	Yes
Bathyergus suillus	982	F		3	UCT	H	U	F	T-Fi	Yes	Yes	Yes	Yes
Bathyergus suillus	1085	F		3	UCT	H	U	F	T-Fi	Yes	Yes	Yes	Yes
Bathyergus suillus	1138	F		3	UCT	H	U	F	T-Fi	Yes	Yes	Yes	Yes
Bathyergus suillus	1144	F		3	UCT	H	U	F	T-Fi	Yes	Yes	Yes	Yes
Bathyergus suillus	1153	F		3	UCT	H	U	F	T-Fi	Yes	Yes	Yes	Yes
Bathyergus suillus	1155	F		3	UCT	H	U	F	T-Fi	Yes	Yes	Yes	Yes
Bathyergus suillus	1163	F		3	UCT	H	U	F	T-Fi	Yes	Yes	Yes	Yes

Bathyergus suillus	1169*	F		3	UCT	H	U	F	T-Fi	Yes	Yes	Yes	Yes
Bathyergus suillus	1171	F		3	UCT	H	U	F	T-Fi	Yes	Yes	Yes	Yes
Bathyergus suillus	1332	F		3	UCT	H	U	F	T-Fi	Yes	Yes	Yes	Yes
Bathyergus suillus	1336	F		3	UCT	H	U	F	T-Fi	Yes	Yes	Yes	Yes
Bathyergus suillus	1373*	F		2	UCT	H	U	F	T-Fi	Yes	Yes	Yes	Yes
Bathyergus suillus	217	M		3	UCT	H	U	F	T-Fi	Yes	Yes	Yes	Yes
Bathyergus suillus	220	M		3	UCT	H	U	F	T-Fi	Yes	Yes	Yes	Yes
Bathyergus suillus	223	M		2	UCT	H	U	F	T-Fi	Yes	Yes	Yes	Yes
Bathyergus suillus	300	M		2	UCT	H	U	F	T-Fi	Yes	Yes	Yes	Yes
Bathyergus suillus	313	M		3	UCT	H	U	F	T-Fi	Yes	Yes	Yes	Yes
Bathyergus suillus	376	M		3	UCT	H	U	F	T-Fi	Yes	Yes	Yes	Yes
Bathyergus suillus	713	M		3	UCT	H	U	F	T-Fi	Yes	Yes	Yes	Yes
Bathyergus suillus	765	M		3	UCT	H	U	F	T-Fi	Yes	Yes	Yes	Yes
Bathyergus suillus	861	M		3	UCT	H	U	F	T-Fi	Yes	Yes	Yes	Yes
Bathyergus suillus	910	M		3	UCT	H	U	F	T-Fi	Yes	Yes	Yes	Yes
Bathyergus suillus	964	M		3	UCT	H	U	F	T-Fi	Yes	Yes	Yes	Yes
Bathyergus suillus	965	M		3	UCT	H	U	F	T-Fi	Yes	Yes	Yes	Yes
Bathyergus suillus	1039	M		3	UCT	H	U	F	T-Fi	Yes	Yes	Yes	Yes
Bathyergus suillus	1050	M		3	UCT	H	U	F	T-Fi	Yes	Yes	Yes	Yes
Bathyergus suillus	1139	M		3	UCT	H	U	F	T-Fi	Yes	Yes	Yes	Yes
Bathyergus suillus	1154	M		3	UCT	H	U	F	T-Fi	Yes	Yes	Yes	Yes
Bathyergus suillus	1338	M		3	UCT	H	U	F	T-Fi	Yes	Yes	Yes	Yes
Bathyergus suillus	1339	M		3	UCT	H	U	F	T-Fi	Yes	Yes	Yes	Yes
Bathyergus suillus	332	M		2	UCT	H	U	F	T-Fi	Yes	Yes	Yes	Yes
Bathyergus suillus	337	M		2	UCT	H	U	F	T-Fi	Yes	Yes	Yes	Yes
Bathyergus suillus	367	F		2	UCT	H	U	F	T-Fi	Yes	Yes	Yes	Yes
Bathyergus suillus	866	M		2	UCT	H	U	F	T-Fi	Yes	Yes	Yes	Yes
Bathyergus suillus	1245	F		2	UCT			F	T-Fi			Yes	Yes

Bathyergus suillus	283*	M		2?	UCT	H	U	F	T-Fi	Yes	Yes	Yes	Yes
Bathyergus suillus	F10	F		3	UP	H	U			Yes	Yes		
Bathyergus suillus	F2	F		3	UP	H	U			Yes	Yes		
Bathyergus suillus	F5	F		3	UP	H	U			Yes	Yes		
Bathyergus suillus	F7	F		3	UP	H	U			Yes	Yes		
Bathyergus suillus	S10*	F		3	UP	H	U			Yes	Yes		
Bathyergus suillus	S11	F		3	UP	H	U			Yes	Yes		
Bathyergus suillus	S12	F		3	UP	H	U			Yes	Yes		
Bathyergus suillus	S13	F		3	UP	H	U			Yes	Yes		
Bathyergus suillus	S14	F		3	UP	H	U			Yes	Yes		
Bathyergus suillus	S16	F		3	UP	H	U			Yes	Yes		
Bathyergus suillus	S17	F		3	UP	H	U			Yes	Yes		
Bathyergus suillus	S2	F		3	UP	H	U			Yes	Yes		
Bathyergus suillus	S20	F		3	UP	H	U			Yes	Yes		
Bathyergus suillus	S3	F		3	UP	H	U			Yes	Yes		
Bathyergus suillus	S6	F		3	UP	H	U			Yes	Yes		
Bathyergus suillus	S7*	F		3	UP	H	U			Yes	Yes		
Bathyergus suillus	S8	F		3	UP	H	U			Yes	Yes		
Bathyergus suillus	F1	M		3	UP	H	U	F		Yes	Yes	Yes	
Bathyergus suillus	F4	M		3	UP	H	U	F		Yes	Yes	Yes	
Bathyergus suillus	S1*	M		3	UP	H	U	F		Yes	Yes	Yes	
Bathyergus suillus	S15*	M		3	UP	H	U	F		Yes	Yes	Yes	
Bathyergus suillus	S18	M		3	UP	H	U	F		Yes	Yes	Yes	
Bathyergus suillus	S19	M		3	UP	H	U	F		Yes	Yes	Yes	
Bathyergus suillus	S4	M		3	UP	H	U	F		Yes	Yes	Yes	
Bathyergus suillus	S5	M		3	UP	H	U	F		Yes	Yes	Yes	
Bathyergus suillus	S9	M		3	UP	H	U	F		Yes	Yes	Yes	
Bathyergus suillus	GM282*	F		3	UP	H	U	F	T-Fi	Yes	Yes	Yes	Yes

Bathyergus suillus	GM283*	F		3	UP	H	U	F	T-Fi	Yes	Yes	Yes	Yes
Bathyergus suillus	GM284*	M		3	UP	H	U	F	T-Fi	Yes	Yes	Yes	Yes
Bathyergus suillus	GM285*	F		3	UP	H	U	F	T-Fi	Yes	Yes	Yes	Yes
Bathyergus janetta	GM005	F		3	UCT	H	U	F	T-Fi	Yes	Yes	Yes	Yes
Bathyergus janetta	GM007	M		3	UCT	H	U	F	T-Fi	Yes	Yes	Yes	Yes
Bathyergus janetta	GM013	F		3	UCT	H		F		Yes		Yes	
Bathyergus janetta	GM014	M		3	UCT	H		F		Yes		Yes	
Bathyergus janetta	GM239	-	2 days	1	UCT	H	U	F	T-Fi	Yes	Yes	Yes	Yes
Bathyergus janetta	GM503	-		2?	UCT	H	U	F	T-Fi	Yes	Yes	Yes	Yes
Heliophobius argenteocinereus	GM245	M	a few days		UZ	H	U	F	T-Fi	Yes	Yes	Yes	No
Heliophobius argenteocinereus	GM246	F	1 day		UZ	H	U			Yes	Yes		
Heliophobius argenteocinereus	GM247	M	~4 days		UZ	H	U	F	T-Fi	Yes	Yes	Yes	Yes
Heliophobius argenteocinereus	GM248	F	~14 days		UZ	H	U	F	T-Fi	Yes	Yes	Yes	Yes
Heliophobius argenteocinereus	103	M	2 months		USB	H	U	F	T-Fi	Yes	Yes	Yes	No
Heliophobius argenteocinereus	77	M	2 months		USB	H	U	F	T-Fi	Yes	Yes	Yes	Yes
Heliophobius argenteocinereus	20	M	3.5 months		USB	H	U	F	T-Fi	Yes	Yes	Yes	Yes
Heliophobius argenteocinereus	350*	F	1 month		USB	H	U	F	T-Fi	Yes	Yes	No	Yes
Heliophobius argenteocinereus	526	M	2 years, 4 months	3	USB	H	U	F	T-Fi	Yes	Yes	Yes	Yes
Heliophobius argenteocinereus	26*	F	1.5 months		USB	H	U	F	T-Fi	Yes	Yes	Yes	Yes
Heliophobius argenteocinereus	11	F	2.5 months		USB	H	U	F	T-Fi	Yes	Yes	Yes	Yes
Heliophobius argenteocinereus	387*	F	at least 5 years	3	USB	H	U	F	T-Fi	Yes	Yes	Yes	Yes
Heliophobius argenteocinereus	27	F	2 years, 10 months	3	USB	H	U	F	T-Fi	Yes	Yes	Yes	Yes

Heliophobius argenteocinereus	386	M	at least 6 years	3	USB	H	U	F	T-Fi	Yes	Yes	Yes	Yes
Heliophobius argenteocinereus	8	M	4 years, 9 months	3	USB	H	U	F	T-Fi	Yes	Yes	Yes	Yes
Heliophobius argenteocinereus	6*	F	at least 1 year, 3 months		USB	H	U	F	T-Fi	Yes	Yes	Yes	Yes
Heliophobius argenteocinereus	516	M	at least 8 years, 2 months	3	USB	H	U	F	T-Fi	Yes	Yes	Yes	Yes
Heliophobius argenteocinereus	361*	F	at least 2 years, 1 month	3	USB	H	U	F	T-Fi	Yes	Yes	Yes	Yes
Heliophobius argenteocinereus	517	M	at least 2 years, 7 months	3	USB	H	U	F	T-Fi	Yes	Yes	Yes	Yes
Heliophobius argenteocinereus	585	M	at least 5 years, 7 months	3	USB	H	U	F	T-Fi	Yes	Yes	Yes	Yes
Heliophobius argenteocinereus	377	M	at least 2 years, 2 months	3	USB	H	U	F	T-Fi	Yes	Yes	Yes	Yes
Heliophobius argenteocinereus	451	F	at least 2 years, 1 month	3	USB	H	U	F	T-Fi	Yes	Yes	Yes	Yes
Heliophobius argenteocinereus	5*	F	at least 3 years	3	USB	H	U	F	T-Fi	Yes	Yes	Yes	Yes
Heliophobius argenteocinereus	18	M	at least 6 years, 8 months	3	USB	H	U	F	T-Fi	Yes	Yes	Yes	Yes
Heliophobius argenteocinereus	393	M	at least 1 year, 11 months		USB	H	U	F	T-Fi	Yes	Yes	Yes	Yes
Heliophobius argenteocinereus	473	F	at least 8 years	3	USB	H	U	F	T-Fi	Yes	Yes	Yes	Yes
Heliophobius argenteocinereus	476	M	at least 2 years, 10 months	3	USB	H	U	F	T-Fi	Yes	Yes	Yes	Yes
Heliophobius argenteocinereus	508	F	at least 3 years, 8 months	3	USB	H	U	F	T-Fi	Yes	Yes	Yes	Yes
Heliophobius argenteocinereus	525	F	2 years, 5 months	3	USB	H	U	F	T-Fi	Yes	Yes	Yes	Yes
Heliophobius argenteocinereus	492	F	at least 14 years	3	USB	H	U	F	T-Fi	Yes	Yes	Yes	Yes
Heliophobius argenteocinereus	299*	F	2-3 days old		USB	H	U	F	T-Fi	Yes	Yes	Yes	No
Heliophobius argenteocinereus	479*	F	6 years, 10 months	3	USB	H	U	F	T-Fi	Yes	Yes	Yes	Yes

Heliophobius argenteocinereus	244	M	at least 2 years, 1 month	3	USB	H	U	F	T-Fi	Yes	Yes	Yes	Yes
Heliophobius argenteocinereus	590*	F	at least 6 years	3	USB	H	U	F	T-Fi	Yes	Yes	Yes	Yes
Heliophobius argenteocinereus	NB10*	M		3	UP	H	U	F	T-Fi	Yes	Yes	Yes	Yes
Heliophobius argenteocinereus	NB21*	F		3	UP	H	U	F	T-Fi	Yes	Yes	Yes	Yes
Heliophobius argenteocinereus	NB05*	M		3	UP	H	U	F	T-Fi	Yes	Yes	Yes	Yes
Heliophobius argenteocinereus	NB15	F		3	UP	H	U	F	T-Fi	Yes	Yes	Yes	Yes
Georychus capensis	GM528		~2 months	2	UCT	H	U	F	T-Fi	Yes	Yes	Yes	Yes
Georychus capensis	GM530		3 days	1	UCT	H	U			Yes	Yes		
Georychus capensis	JO475*	F	NB21	2	UP	H	U	F	T-Fi	Yes	Yes	Yes	Yes
Georychus capensis	JO402*	M	GM530	3	UP	H	U	F	T-Fi	Yes	Yes	Yes	Yes
Georychus capensis	GM295*	-	JO402	2	UCT	H	U	F	T-Fi	Yes	Yes	Yes	Yes
Georychus capensis	GM296*	F	GM295	1	UP	H	U	F	T-Fi	Yes	Yes	Yes	Yes
Georychus capensis	GM297*	F	GM296	2	UP	H	U	F	T-Fi	Yes	Yes	Yes	Yes
Georychus capensis	GM298*	F	GM297	2	UP	H	U	F	T-Fi	Yes	Yes	Yes	Yes
Georychus capensis	Z4	F	GM298	2	UP	H	U			Yes	Yes		
Georychus capensis	Z6	F	Z4	3	UP	H	U			Yes	Yes		
Georychus capensis	Z9	M	Z9	2	UP	H	U			Yes	Yes		
Georychus capensis	Z10	F	Z10	2	UP	H	U			Yes	Yes		
Georychus capensis	Z11	F	Z11	3	UP	H	U			Yes	Yes		
Georychus capensis	Z12	F	Z12	3	UP	H	U			Yes	Yes		
Georychus capensis	Z22	M	Z22	1	UP	H	U			Yes	Yes		
Georychus capensis	Z23	F	Z23	2	UP	H	U			Yes	Yes		
Georychus capensis	Z25	F	Z25	3	UP	H	U			Yes	Yes		
Georychus capensis	Z27	F	Z27	1	UP	H	U			Yes	Yes		
Georychus capensis	Z28	M	Z28	1	UP	H	U			Yes	Yes		

Georychus capensis	Z31	F	Z31	3	UP	H	U			Yes	Yes		
Georychus capensis	Z32	F	Z32	2	UP	H	U			Yes	Yes		
Georychus capensis	Z33	M	Z33	2	UP	H	U			Yes	Yes		
Georychus capensis	Z35	F	Z35	3	UP	H	U			Yes	Yes		
Georychus capensis	Z36	F	Z36	2	UP	H	U			Yes	Yes		
Georychus capensis	Z37	F	Z37	3	UP	H	U			Yes	Yes		
Georychus capensis	Z38	F	Z38	3	UP	H	U			Yes	Yes		
Georychus capensis	Z210	M	Z210	1	UP	H	U			Yes	Yes		
Georychus capensis	Z212	M	Z212	2	UP	H	U			Yes	Yes		
Georychus capensis	Z214	F	Z214	3	UP	H	U			Yes	Yes		
Georychus capensis	Z215	M	Z215	2	UP	H				Yes			
Georychus capensis	Z216	F	Z216	1	UP	H	U			Yes	Yes		
Georychus capensis	Z218	F	Z225	2	UP		U				Yes		
Georychus capensis	Z219	M	A01	2	UP	H	U			Yes	Yes		
Georychus capensis	Z225	-	A03	2	UP	H	U			Yes	Yes		
Georychus capensis	A01	F	A06	1	UP	H	U	F	T-Fi	Yes	Yes	Yes	Yes
Georychus capensis	A03	F	A19	1	UP	H	U	F	T-Fi	Yes	Yes	Yes	Yes
Georychus capensis	A06	M	A35	1	UP	H	U	F	T-Fi	Yes	Yes	Yes	Yes
Georychus capensis	A19	M	A40	2	UP	H	U	F	T-Fi	Yes	Yes	Yes	Yes
Georychus capensis	A35	F	A43	2	UP	H	U	F	T-Fi	Yes	Yes	Yes	Yes
Georychus capensis	A40	M	A51	2	UP	H	U	F	T-Fi	Yes	Yes	Yes	Yes
Georychus capensis	A43	F	A95	2	UP	H	U	F	T-Fi	Yes	Yes	Yes	Yes
Georychus capensis	A51	F	A97	2	UP	H	U	F	T-Fi	Yes	Yes	Yes	Yes
Georychus capensis	A95	F	A99	3	UP	H	U	F	T-Fi	Yes	Yes	Yes	Yes
Georychus capensis	A97	F	A100	3	UP	H	U	F	T-Fi	Yes	Yes	Yes	Yes
Georychus capensis	A99	F	A115	3	UP	H	U	F	T-Fi	Yes	Yes	Yes	Yes
Georychus capensis	A100	F	A118	3	UP	H	U	F	T-Fi	Yes	Yes	Yes	Yes
Georychus capensis	A115	M	A128	3	UP	H	U	F	T-Fi	Yes	Yes	Yes	Yes

Georychus capensis	A118	M	A130	3	UP	H	U	F	T-Fi	Yes	Yes	Yes	Yes
Georychus capensis	A128	F	A131	3	UP	H	U	F	T-Fi	Yes	Yes	Yes	Yes
Georychus capensis	A130	F		3	UP	H	U	F	T-Fi	Yes	Yes	Yes	Yes
Georychus capensis	A131	F		2	UP	H	U	F	T-Fi	Yes	Yes	Yes	Yes
Cryptomys hottentotus	GM102	F		3	UCT	H	U	F	T-Fi	Yes	Yes	Yes	Yes
Cryptomys hottentotus	GM103	M		3	UCT	H	U	F	T-Fi	Yes	Yes	Yes	Yes
Cryptomys hottentotus	GM104	M		3	UCT	H	U	F	T-Fi	Yes	Yes	Yes	Yes
Cryptomys hottentotus	GM105	M		3	UCT	H	U	F	T-Fi	Yes	Yes	Yes	Yes
Cryptomys hottentotus	GM106*	M		3	UCT	H	U	F	T-Fi	Yes	Yes	Yes	Yes
Cryptomys hottentotus	GM107	M		2	UCT	H	U	F	T-Fi	Yes	Yes	Yes	Yes
Cryptomys hottentotus	GM108	F		3	UCT	H	U	F	T-Fi	Yes	Yes	Yes	Yes
Cryptomys hottentotus	GM109	M		3	UCT	H	U	F	T-Fi	Yes	Yes	Yes	Yes
Cryptomys hottentotus	GM110	M		3	UCT	H	U	F	T-Fi	Yes	Yes	Yes	Yes
Cryptomys hottentotus	GM111	F		3	UCT	H	U	F	T-Fi	Yes	Yes	Yes	Yes
Cryptomys hottentotus	GM112	F		3	UCT	H	U	F	T-Fi	Yes	Yes	Yes	Yes
Cryptomys hottentotus	GM113	F		2	UCT	H	U	F	T-Fi	Yes	Yes	Yes	Yes
Cryptomys hottentotus	GM114	F		2	UCT	H	U	F	T-Fi	Yes	Yes	Yes	Yes
Cryptomys hottentotus	GM115*	M		3	UCT	H	U	F	T-Fi	Yes	Yes	Yes	Yes
Cryptomys hottentotus	GM116	-		3	UCT	H	U	F	T-Fi	Yes	Yes	Yes	Yes
Cryptomys hottentotus	GM117	M		3	UCT	H	U	F	T-Fi	Yes	Yes	Yes	Yes
Cryptomys hottentotus	GM118	F		2	UCT	H	U	F	T-Fi	Yes	Yes	Yes	Yes
Cryptomys hottentotus	GM119*	M		2	UCT	H	U	F	T-Fi	Yes	Yes	Yes	Yes
Cryptomys hottentotus	GM120	F		2	UCT	H	U	F	T-Fi	Yes	Yes	Yes	Yes
Cryptomys hottentotus	GM121*	M		2	UCT	H	U	F	T-Fi	Yes	Yes	Yes	Yes
Cryptomys hottentotus	GM122	F		3	UCT	H	U	F	T-Fi	Yes	Yes	Yes	Yes
Cryptomys hottentotus	GM123*	M		3	UCT	H	U	F	T-Fi	Yes	Yes	Yes	Yes
Cryptomys hottentotus	GM124	F		2	UCT	H	U	F	T-Fi	Yes	Yes	Yes	Yes
Cryptomys hottentotus	GM125	F		3	UCT	H	U	F	T-Fi	Yes	Yes	Yes	Yes

Cryptomys hottentotus	GM126	M		3	UCT	H	U	F	T-Fi	Yes	Yes	Yes	Yes
Cryptomys hottentotus	GM127	M		3	UCT	H	U	F	T-Fi	Yes	Yes	Yes	Yes
Cryptomys hottentotus	GM128	F		3	UCT	H	U	F	T-Fi	Yes	Yes	Yes	Yes
Cryptomys hottentotus	GM129*	M		3	UCT	H	U	F	T-Fi	Yes	Yes	Yes	Yes
Cryptomys hottentotus	GM130	F		2	UCT	H	U	F	T-Fi	Yes	Yes	Yes	Yes
Cryptomys hottentotus	GM131	M		2	UCT	H	U	F	T-Fi	Yes	Yes	Yes	Yes
Cryptomys hottentotus	GM132*	M		3	UCT	H	U	F	T-Fi	Yes	Yes	Yes	Yes
Cryptomys hottentotus	GM133	F		3	UCT	H	U	F	T-Fi	Yes	Yes	Yes	Yes
Cryptomys hottentotus	GM134	M		2	UCT	H	U	F	T-Fi	Yes	Yes	Yes	Yes
Cryptomys hottentotus	GM135	M		3	UCT	H	U	F	T-Fi	Yes	Yes	Yes	Yes
Cryptomys hottentotus	GM136	F		2	UCT	H	U	F	T-Fi	Yes	Yes	Yes	Yes
Cryptomys hottentotus	GM137	M		2	UCT	H	U	F	T-Fi	Yes	Yes	Yes	Yes
Cryptomys hottentotus	GM138	M		3	UCT	H	U	F	T-Fi	Yes	Yes	Yes	Yes
Cryptomys hottentotus	GM139	M		2	UCT	H	U	F	T-Fi	Yes	Yes	Yes	Yes
Cryptomys hottentotus	GM140	M		3	UCT	H	U	F	T-Fi	Yes	Yes	Yes	Yes
Cryptomys hottentotus	GM141	F		3	UCT	H	U	F	T-Fi	Yes	Yes	Yes	Yes
Cryptomys hottentotus	GM142	M		3	UCT	H	U	F	T-Fi	Yes	Yes	Yes	Yes
Cryptomys hottentotus	GM143	F		3	UCT	H	U	F	T-Fi	Yes	Yes	Yes	Yes
Cryptomys hottentotus	GM144	F		3	UCT	H	U	F	T-Fi	Yes	Yes	Yes	Yes
Cryptomys hottentotus	GM145*	M		3	UCT	H	U	F	T-Fi	Yes	Yes	Yes	Yes
Cryptomys hottentotus	GM146	F		3	UCT	H	U	F	T-Fi	Yes	Yes	Yes	Yes
Cryptomys hottentotus	GM147	F		3	UCT	H	U	F	T-Fi	Yes	Yes	Yes	Yes
Cryptomys hottentotus	GM148	M		2	UCT	H	U	F	T-Fi	Yes	Yes	Yes	Yes
Cryptomys hottentotus	GM149	F		2	UCT	H	U	F	T-Fi	Yes	Yes	Yes	Yes
Cryptomys hottentotus	GM150*	M		3	UCT	H	U	F	T-Fi	Yes	Yes	Yes	Yes
Cryptomys hottentotus	GM151	F		3	UCT	H	U	F	T-Fi	Yes	Yes	Yes	Yes
Cryptomys hottentotus	GM152*	M		3	UCT	H	U	F	T-Fi	Yes	Yes	Yes	Yes
Cryptomys hottentotus	GM153	-		2	UCT	H	U	F	T-Fi	Yes	Yes	Yes	Yes

Cryptomys hottentotus	GM154	F		2	UCT	H	U	F	T-Fi	Yes	Yes	Yes	Yes
Fukomys mechowii	227	F	1 day	1	USB	H	U	F	T-Fi	Yes	Yes	Yes	No
Fukomys mechowii	228*	M	1 day	1	USB	H	U	F	T-Fi	Yes	Yes	Yes	No
Fukomys mechowii	146	F	2 days	1	USB	H	U	F	T-Fi	Yes	Yes	Yes	No
Fukomys mechowii	148	M	1 day	1	USB	H	U	F	T-Fi	Yes	Yes	Yes	No
Fukomys mechowii	145	F	5 days	1	USB	H	U	F	T-Fi	Yes	Yes	Yes	Yes
Fukomys mechowii	147	F	3 days	1	USB	H	U	F	T-Fi	Yes	Yes	Yes	Yes
Fukomys mechowii	59	M	2 days	1	USB	H	U	F	T-Fi	Yes	Yes	Yes	No
Fukomys mechowii	154	F	2 days	1	USB	H	U	F	T-Fi	Yes	Yes	Yes	Yes
Fukomys mechowii	55	F	4 days	1	USB	H	U	F	T-Fi	Yes	Yes	Yes	No
Fukomys mechowii	58	M	4 days	1	USB	H	U	F	T-Fi	Yes	Yes	Yes	Yes
Fukomys mechowii	125	F	1 month	1	USB	H	U	F	T-Fi	Yes	Yes	Yes	Yes
Fukomys mechowii	167	M	21 days	1	USB	H	U	F	T-Fi	Yes	Yes	Yes	Yes
Fukomys mechowii	36*	M	5 days	1	USB	H	U	F	T-Fi	Yes	Yes	Yes	Yes
Fukomys mechowii	45	F	9 days	1	USB	H	U	F	T-Fi	Yes	Yes	Yes	Yes
Fukomys mechowii	153*	M	21 days	1	USB	H	U	F	T-Fi	Yes	Yes	Yes	Yes
Fukomys mechowii	78*	M	1 month, 11 days	1	USB	H	U	F	T-Fi	Yes	Yes	Yes	Yes
Fukomys mechowii	123	F	4-5 months?	2	USB	H	U	F	T-Fi	Yes	Yes	Yes	Yes
Fukomys mechowii	54	F	17 days	1	USB	H	U	F	T-Fi	Yes	Yes	Yes	Yes
Fukomys mechowii	116	F		1	USB	H	U	F	T-Fi	Yes	Yes	Yes	No
Fukomys mechowii	14*	M	4 months	2	USB	H	U	F	T-Fi	Yes	Yes	Yes	Yes
Fukomys mechowii	23	F	15 months	2	USB	H	U	F	T-Fi	Yes	Yes	Yes	Yes
Fukomys mechowii	179*	M	13 months	2	USB	H	U	F	T-Fi	Yes	Yes	Yes	Yes
Fukomys mechowii	3	F	1 year, 10 months	3	USB	H	U	F	T-Fi	Yes	Yes	Yes	Yes
Fukomys mechowii	1	F	4 years, 4 months	3	USB	H	U	F	T-Fi	Yes	Yes	Yes	Yes
Fukomys mechowii	177*	M	2 years, 3 months	3	USB	H	U	F	T-Fi	Yes	Yes	Yes	Yes
Fukomys mechowii	497	F	13 years, 6 months	3	USB	H	U	F	T-Fi	Yes	Yes	Yes	Yes
Fukomys mechowii	478*	M	3 years, 2 months	3	USB	H	U	F	T-Fi	Yes	Yes	Yes	Yes

Fukomys mechowii	494	F	7 years, 1 month	3	USB	H	U	F	T-Fi	Yes	Yes	Yes	Yes
Fukomys mechowii	589	F	10 years, 7 months	3	USB	H	U	F	T-Fi	Yes	Yes	Yes	Yes
Fukomys mechowii	242*	M	3 years	3	USB	H	U	F	T-Fi	Yes	Yes	Yes	Yes
Fukomys mechowii	2*	M	1 year, 8 months	3	USB	H	U	F	T-Fi	Yes	Yes	Yes	Yes
Fukomys mechowii	531	-	1 year, 5 months	3	USB	H	U	F	T-Fi	Yes	Yes	Yes	Yes
Fukomys damarensis	NB227	F		3	UP	H	U	F	T-Fi	Yes	Yes	Yes	Yes
Fukomys damarensis	NB228	F		3	UP	H	U	F	T-Fi	Yes	Yes	Yes	Yes
Fukomys damarensis	NB229	F		2	UP	H	U	F	T-Fi	Yes	Yes	Yes	Yes
Fukomys damarensis	NB230*	M		1-2?	UP	H	U	F	T-Fi	Yes	Yes	Yes	Yes
Fukomys damarensis	NB231*	M		2	UP	H	U	F	T-Fi	Yes	Yes	Yes	Yes
Fukomys damarensis	NB232*	M		1	UP	H	U	F	T-Fi	Yes	Yes	Yes	Yes
Fukomys damarensis	NB233*	M		1	UP	H	U	F	T-Fi	Yes	Yes	Yes	Yes
Fukomys damarensis	NB238	-		3	UP	H	U			Yes	Yes		
Fukomys damarensis	NB422	M	1 day	1	UP	H	U	F	T-Fi	Yes	Yes	Yes	Yes
Fukomys damarensis	NB423	-	1 day	1	UP	H	U	F	T-Fi	Yes	Yes	Yes	No
Fukomys damarensis	GAP315	F		3	UCT	H	U			Yes	Yes		
Fukomys damarensis	D11	M		3	UP	H	U			Yes	Yes		
Fukomys damarensis	D12	M		3	UP	H	U			Yes	Yes		
Fukomys damarensis	D13	F		3	UP	H	U			Yes	Yes		
Fukomys damarensis	D14	M		3	UP	H	U			Yes	Yes		
Fukomys damarensis	D15	F		3	UP	H	U			Yes	Yes		
Fukomys damarensis	D16	M		3	UP	H	U			Yes	Yes		
Fukomys damarensis	D17	M		3	UP	H	U			Yes	Yes		
Fukomys damarensis	D18	F		3	UP	H	U			Yes	Yes		
Fukomys damarensis	D19	F		3	UP	H	U			Yes	Yes		
Fukomys damarensis	HD2	-		2-3?	UP	H	U			Yes	Yes		
Fukomys damarensis	FD5	-		2	UP	H	U			Yes	Yes		
Fukomys damarensis	GM039	-		1	UP	H				Yes			

Fukomys damarensis (ca)	G3F035	F	1 Day	1	KRC	H	U	F	T-Fi	Yes	Yes	Yes	No
Fukomys damarensis (ca)	G3M036 *	M	1 Day	1	KRC	H	U	F	T-Fi	Yes	Yes	Yes	Yes
Fukomys damarensis (ca)	G4F030	F	1 Month, 29 Days	1	KRC	H	U	F	T-Fi	Yes	Yes	Yes	Yes
Fukomys damarensis (ca)	G4F042	F	13 Months, 10 Days	3	KRC	H	U	F	T-Fi	Yes	Yes	Yes	Yes
Fukomys damarensis (ca)	G4M018	M	30 Months, 28 Days	3	KRC	H	U	F	T-Fi	Yes	Yes	Yes	Yes
Fukomys damarensis (ca)	G4M029	M	1 Month, 10 Days	1	KRC	H	U	F	T-Fi	Yes	Yes	Yes	Yes
Fukomys damarensis (ca)	G4M034 *	M	20 Months, 27 Days	3	KRC	H	U	F	T-Fi	Yes	Yes	Yes	Yes
Fukomys damarensis (ca)	G4M036	M	1 Month, 29 Days	1	KRC	H	U	F	T-Fi	Yes	Yes	Yes	Yes
Fukomys damarensis (ca)	G4M039 *	M	18 Months, 21 Days	3	KRC	H	U	F	T-Fi	Yes	Yes	Yes	Yes
Fukomys damarensis (ca)	G4M041 *	M	10 Months, 14 Days	2	KRC	H	U	F	T-Fi	Yes	Yes	Yes	Yes
Fukomys damarensis (ca)	G4M047 *	M	7 Months, 0 Days	2	KRC	H	U	F	T-Fi	Yes	Yes	Yes	Yes
Fukomys damarensis	F2M012*	M		1	KRC	H	U	F	T-Fi	Yes	Yes	Yes	Yes
Fukomys damarensis	F2F013	F		1	KRC	H	U	F	T-Fi	Yes	Yes	Yes	Yes
Fukomys damarensis	G7F013	F		2	KRC	H	U	F	T-Fi	Yes	Yes	Yes	Yes
Fukomys damarensis	F6F002	F		3	KRC	H	U	F	T-Fi	Yes	Yes	Yes	Yes
Fukomys damarensis	G4M008 *	M		3	KRC	H	U	F	T-Fi	Yes	Yes	Yes	Yes
Fukomys damarensis	G5F003	F		3	KRC	H	U	F	T-Fi	Yes	Yes	Yes	Yes
Fukomys damarensis	L29F002	F		3	KRC	H	U	F	T-Fi	Yes	Yes	Yes	Yes
Fukomys damarensis	G4F012	F		3	KRC	H	U	F	T-Fi	Yes	Yes	Yes	Yes
Fukomys damarensis	G4F002	F		3	KRC	H	U	F	T-Fi	Yes	Yes	Yes	Yes
Fukomys damarensis	G4M009 *	M		3	KRC	H	U	F	T-Fi	Yes	Yes	Yes	Yes
Fukomys damarensis	G3M007	M		3	KRC	H	U	F	T-Fi	Yes	Yes	Yes	Yes
Fukomys damarensis	G4M001	M		3	KRC	H	U	F	T-Fi	Yes	Yes	Yes	Yes
Fukomys damarensis	G3M001 *	M		3	KRC	H	U	F	T-Fi	Yes	Yes	Yes	Yes
Fukomys damarensis	Z3M006*	M		3	KRC	H	U	F	T-Fi	Yes	Yes	Yes	Yes
Heterocephalus glaber (ca)	JJ-402	-	3 days	1	UCT	H	U	F	T-Fi	No	Yes	Yes	No
Heterocephalus glaber (ca)	JJ-405	-	Perinatal	0	UCT	H	U	F	T-Fi	No	Yes	Yes	No
Heterocephalus glaber (ca)	JJ-416	-	2 Months, 2 days	1-2?	UCT	H	U	F	T-Fi	No	Yes	Yes	No

Heterocephalus glaber (ca)	JJ-417	-	5 days	1	UCT	H	U	F	T-Fi	No	Yes	Yes	No
Heterocephalus glaber (ca)	JJ-557	-	Juvenile	1?	UCT	H	U	F	T-Fi	No	Yes	Yes	No
Heterocephalus glaber (ca)	JJ-559	-	Perinatal	0	UCT	H	U	F	T-Fi	No	Yes	Yes	No
Heterocephalus glaber (ca)	JJ-560	-	Perinatal	0	UCT	H	U	F	T-Fi	No	Yes	Yes	No
Heterocephalus glaber (ca)	JJ-001	F	~1 year, 6 months	2	UCT	H	U	F	T-Fi	No	Yes	Yes	No
Heterocephalus glaber (ca)	JJ-002	-		2	UCT	H	U	F	T-Fi	No	Yes	Yes	No
Heterocephalus glaber (ca)	JJ-008	F	~10 years	3	UCT	H	U	F	T-Fi	No	Yes	Yes	No
Heterocephalus glaber (ca)	JJ-009	M		3	UCT	H	U	F	T-Fi	No	Yes	Yes	No
Heterocephalus glaber (ca)	JJ-010	-	~4 months	1	UCT	H	U	F	T-Fi	No	Yes	Yes	No
Heterocephalus glaber (ca)	JJ-045*	M		2	UCT	H	U	F	T-Fi	No	Yes	Yes	No
Heterocephalus glaber (ca)	JJ-046*	F		2	UCT	H	U	F	T-Fi	No	Yes	Yes	No
Heterocephalus glaber (ca)	1200-047	-		2	UCT	H	U	F	T-Fi	No	Yes	Yes	No
Heterocephalus glaber (ca)	1200-048	M		3	UCT	H	U	F	T-Fi	No	Yes	Yes	No
Heterocephalus glaber (ca)	1200-049	F		3	UCT	H	U	F	T-Fi	No	Yes	Yes	No
Heterocephalus glaber (ca)	1200-050	M		3	UCT	H	U	F	T-Fi	No	Yes	Yes	No
Heterocephalus glaber (ca)	1200-051	F		3	UCT	H	U	F	T-Fi	No	Yes	Yes	No
Heterocephalus glaber (ca)	1200-052*	M		3	UCT	H	U	F	T-Fi	No	Yes	Yes	No
Heterocephalus glaber (ca)	1200-053	M		3	UCT	H	U	F	T-Fi	No	Yes	Yes	No
Heterocephalus glaber (ca)	1200-054	F		3	UCT	H	U	F	T-Fi	No	Yes	Yes	No
Heterocephalus glaber (ca)	1200-055	M		3	UCT	H	U	F	T-Fi	No	Yes	Yes	No
Heterocephalus glaber (ca)	1200-056	-		3	UCT	H	U	F	T-Fi	No	Yes	Yes	No
Heterocephalus glaber (ca)	1200-057	M		3	UCT	H	U	F	T-Fi	No	Yes	Yes	No
Heterocephalus glaber (ca)	1200-058	M		3	UCT	H	U	F	T-Fi	No	Yes	Yes	No
Heterocephalus glaber (ca)	1200-059	F		3	UCT	H	U	F	T-Fi	No	Yes	Yes	No
Heterocephalus glaber (ca)	1200-060*	M		3	UCT	H	U	F	T-Fi	No	Yes	Yes	No
Heterocephalus glaber (ca)	1200-061*	M		3	UCT	H	U	F	T-Fi	No	Yes	Yes	No
Heterocephalus glaber (ca)	1200-063	F		3	UCT	H	U	F	T-Fi	No	Yes	Yes	No
Heterocephalus glaber (ca)	1200-064	F		3	UCT	H	U	F	T-Fi	No	Yes	Yes	No

Heterocephalus glaber (ca)	1200-065	F		3	UCT	H	U	F	T-Fi	No	Yes	Yes	No
Heterocephalus glaber (ca)	1200-066	-		3	UCT	H	U	F	T-Fi	No	Yes	Yes	No
Heterocephalus glaber (ca)	1200-067*	F		2	UCT	H	U	F	T-Fi	No	Yes	Yes	No
Heterocephalus glaber (ca)	1200-068	F		2	UCT	H		F	T-Fi	No		Yes	No
Heterocephalus glaber (ca)	1200-069	-		3	UCT	H	U	F	T-Fi	No	Yes	Yes	Yes
Heterocephalus glaber (ca)	1000-070	F		2	UCT	H	U	F	T-Fi	No	Yes	Yes	No
Heterocephalus glaber (ca)	1000-071	F		3	UCT	H	U	F	T-Fi	No	Yes	Yes	No
Heterocephalus glaber (ca)	1000-073	M		3	UCT	H	U	F	T-Fi	No	Yes	Yes	No
Heterocephalus glaber (ca)	1000-074	M		3	UCT	H	U	F	T-Fi	No	Yes	Yes	No
Heterocephalus glaber (ca)	1000-075	-		3	UCT	H	U	F	T-Fi	No	Yes	Yes	No
Heterocephalus glaber (ca)	1000-076	F		3	UCT	H	U	F	T-Fi	No	Yes	Yes	No
Heterocephalus glaber (ca)	1000-077	F		3	UCT	H	U	F	T-Fi	No	Yes	Yes	No
Heterocephalus glaber (ca)	1000-078	F		3	UCT	H	U	F	T-Fi	No	Yes	Yes	No
Heterocephalus glaber (ca)	1000-079	F		3	UCT	H	U	F	T-Fi	No	Yes	Yes	Yes
Heterocephalus glaber (ca)	1000-080	F		3	UCT	H	U	F	T-Fi	No	Yes	Yes	No
Heterocephalus glaber (ca)	1000-081*	M		3	UCT	H	U	F	T-Fi	No	Yes	Yes	Yes
Heterocephalus glaber (ca)	1000-082*	M		3	UCT	H	U	F	T-Fi	No	Yes	Yes	No
Heterocephalus glaber (ca)	1000-083	F		3	UCT	H	U	F	T-Fi	No	Yes	Yes	No
Heterocephalus glaber (ca)	1000-084	F		3	UCT	H	U	F	T-Fi	No	Yes	Yes	No
Heterocephalus glaber (ca)	1000-085	M		3	UCT	H	U	F	T-Fi	No	Yes	Yes	No
Heterocephalus glaber (ca)	1000-086	F		3	UCT	H	U	F	T-Fi	No	Yes	Yes	No
Heterocephalus glaber (ca)	5000-087	M		3	UCT	H	U	F	T-Fi	No	Yes	Yes	No
Heterocephalus glaber (ca)	5000-088*	M		2	UCT	H	U	F	T-Fi	No	Yes	Yes	No
Heterocephalus glaber (ca)	5000-091	F		3	UCT	H	U	F	T-Fi	No	Yes	Yes	No
Heterocephalus glaber (ca)	5000-092*	M		3	UCT	H	U	F	T-Fi	No	Yes	Yes	No
Heterocephalus glaber (ca)	5000-093	F		3	UCT	H	U	F	T-Fi	No	Yes	Yes	No
Heterocephalus glaber (ca)	5000-094	M		3	UCT	H	U	F	T-Fi	No	Yes	Yes	No
Heterocephalus glaber (ca)	5000-095	M		2	UCT	H	U	F	T-Fi	No	Yes	Yes	No

Heterocephalus glaber (ca)	5000-096	F		3	UCT	H	U	F	T-Fi	No	Yes	Yes	No
Heterocephalus glaber (ca)	5000-097	F		3	UCT	H	U	F	T-Fi	No	Yes	Yes	No
Heterocephalus glaber (ca)	5000-098	F		3	UCT	H	U	F	T-Fi	No	Yes	Yes	No
Heterocephalus glaber (ca)	5000-099	M		3	UCT	H	U	F	T-Fi	No	Yes	Yes	No
Heterocephalus glaber (ca)	5000-100	F		3	UCT	H	U	F	T-Fi	No	Yes	Yes	No
Heterocephalus glaber (ca)	5000-101*	M		3	UCT	H	U	F	T-Fi	No	Yes	Yes	No
Heterocephalus glaber (ca)	GM498	F		3	UP	H	U	F	T-Fi	No	Yes	Yes	No
Heterocephalus glaber (ca)	GM499	M		3?	UP	H	U	F	T-Fi	No	Yes	Yes	No
Heterocephalus glaber (ca)	GM500	?		3?	UP	H	U	F	T-Fi	No	Yes	Yes	No
Heterocephalus glaber (ca)	GM501	F		3?	UP	H	U	F	T-Fi	No	Yes	Yes	No
Heterocephalus glaber (ca)	GM505	M		3?	UP	H	U	F	T-Fi	No	Yes	Yes	No
Heterocephalus glaber (ca)	GM506	F		3	UP	H	U	F	T-Fi	No	Yes	Yes	No
Heterocephalus glaber (ca)	GM507	F		3?	UP	H	U	F	T-Fi	No	Yes	Yes	No
Heterocephalus glaber (ca)	GM508	F		3?	UP	H	U	F	T-Fi	No	Yes	Yes	No
Heterocephalus glaber (ca)	GM509	F		3?	UP	H	U	F	T-Fi	No	Yes	Yes	No
Heterocephalus glaber (ca)	GM510	F		3?	UP	H	U	F	T-Fi	No	Yes	Yes	No
Heterocephalus glaber (ca)	GM511	F		3?	UP	H	U	F	T-Fi	No	Yes	Yes	No
Hystrix africaeaustralis	38634				IZIKO	H	U	F	T-Fi	Yes	Yes	No	No
Hystrix africaeaustralis	36199				IZIKO	H	U	F	T-Fi	Yes	Yes	No	No
Hystrix africaeaustralis	38502				IZIKO	H	U	F	T-Fi	Yes	Yes	No	No
Hystrix africaeaustralis	38536				IZIKO	H	U	F	T-Fi	Yes	Yes	No	No
Hystrix africaeaustralis	36738				IZIKO	H	U	F	T-Fi	Yes	Yes	No	No
Hystrix africaeaustralis	35988				IZIKO	H	U	F	T-Fi	Yes	Yes	No	No
Hystrix africaeaustralis	39666				IZIKO	H	U	F	T-Fi	Yes	Yes	No	No
Hystrix africaeaustralis	40427				IZIKO	H	U	F	T-Fi	Yes	Yes	No	No
Hystrix africaeaustralis	37705				IZIKO	H	U	F	T-Fi	Yes	Yes	No	No
Hystrix africaeaustralis	40403				IZIKO	H	U	F	T-Fi	Yes	Yes	No	No
Hystrix africaeaustralis	35137				IZIKO	H	U	F		Yes	Yes	No	

Hystrix africaeaustralis	40310				IZIKO	H	U	F	T-Fi	Yes	Yes	No	No
Hystrix africaeaustralis	36139				IZIKO	H	U			Yes	Yes		
Hystrix africaeaustralis	38525				IZIKO	H	U	F	T-Fi	Yes	Yes	No	No
Hystrix africaeaustralis	40429				IZIKO	H	U	F	T-Fi	Yes	Yes	No	No
Hystrix africaeaustralis	40744				IZIKO	H	U	F	T-Fi	Yes	Yes	No	No
Hystrix africaeaustralis	36060				IZIKO	H	U	F	T-Fi	Yes	Yes	No	No
Hystrix africaeaustralis	38256				IZIKO	H	U	F	T-Fi	Yes	Yes	No	No
Petromus typicus	40790				IZIKO	H	U	F	T-Fi	Yes	Yes	No	No

Supplementary Table 2. Comparison of the out-of-sample predictive score by means of the Widely Applicable Information Criterion (WAIC) of models with and without body mass (BM). SE gives an approximate standard error of each score, Δ_i WAIC gives the difference between the *i*th model and the model with the lowest WAIC, Δ_i SE gives the approximate standard error of the difference between the *i*th model and the model with the lowest WAIC, and *wi* is the weight of the *i*th model and indicates a relative support for that model. Model with a subscript *I* indicates a model without BM (i.e. intercept-only), and model with a subscript BM is a model with BM. Relative position of the deltoid tuberosity (RDT); Index of fossorial ability (IFA); Tibio-fibular junction index (TJI).

Index	Model	*WAIC* (*SE*)	Δ_i *WAIC*	Δ_i *SE*	w_i
RDT					
	RDT_I	-572.71 (16.62)	0	*NA*	0.61
	RDT_{BM}	-571.78 (16.86)	0.93	2.38	0.39
TJI					
	TJI_I	-467.85 (20.04)	0	*NA*	0.62
	TJI_{BM}	-466.85 (21.03)	1.01	3.02	0.38
IFA					
	IFA_{BM}	-627.95 (24.41)	0	*NA*	0.96
	IFA_I	-621.64 (24.64)	6.31	4.43	0.04

Supplementary Table 3. Summary of the phylogenetic varying effects regression with estimates of population-level parameters for three morpho-functional indices. Model for each index includes estimate of intercept mean (μ_α) and slope mean (μ_β), as well as estimates of phylogenetic (σ_{phy}) and species-specific (σ_{spp}) components, with 89% compatibility intervals (CI) in square brackets. Relative position of the deltoid tuberosity (RDT); Index of fossorial ability (IFA); Tibio-fibular junction index (TJI).

Index	μ_α [89% CI]	μ_β [89% CI]	σ_{phy_α} [89% CI]	σ_{phy_β} [89% CI]	σ_{spp} [89% CI]
RDT	-0.58 [-0.70, -0.45]	0.01 [-0.01, 0.03]	0.02 [0.00, 0.09]	0.00 [0.00, 0.00]	0.07 [0.00, 0.19]
TJI	-0.68 [-0.82, -0.51]	0.01 [-0.01, 0.04]	0.03 [0.00, 0.13]	0.00 [0.00, 0.00]	0.08 [0.01, 0.24]
IFA	-1.31 [-1.49, -1.05]	0.02 [-0.01, 0.06]	0.06 [0.00, 0.23]	0.00 [0.00, 0.01]	0.11 [0.01, 0.33]

Supplementary Table 4. Summary of the phylogenetic varying effects regression for three morpho-functional indices. Each species *j* has its own estimate of intercept (α_j) and slope (β_j), with 89% compatibility intervals (CI) in square brackets. Relative position of the deltoid tuberosity (RDT); Index of fossorial ability (IFA); Tibio-fibular junction index (TJI).

Index	Species	α_j [89% CI]	β_j [89% CI]
RDT			
	B. suillus	-0.58 [-0.71, -0.45]	0.01 [-0.01, 0.03]
	C. hottentotus	-0.60 [-0.74, -0.47]	0.02 [0.00, 0.05]
	F. damarensis	-0.60 [-0.73, -0.46]	0.00 [-0.02, 0.02]
	F. mechowii	-0.63 [-0.80, -0.49]	0.01 [-0.01, 0.04]
	G. capensis	-0.58 [-0.70, -0.45]	0.01 [-0.01, 0.03]
	H. argenteocinereus	-0.53 [-0.66, -0.37]	0.00 [-0.02, 0.03]
TJI			
	B. suillus	-0.63 [-0.80, -0.44]	0.01 [-0.01, 0.04]
	C. hottentotus	-0.71 [-0.88, -0.55]	0.02 [-0.01, 0.05]
	F. damarensis	-0.66 [-0.82, -0.47]	0.00 [-0.03, 0.03]
	F. mechowii	-0.69 [-0.86, -0.51]	0.01 [-0.02, 0.04]
	G. capensis	-0.72 [-0.89, -0.56]	0.02 [-0.01, 0.04]
	H. argenteocinereus	-0.73 [-0.92, -0.56]	0.02 [0.00, 0.06]
IFA			
	B. suillus	-1.25 [-1.49, -0.94]	-0.03 [-0.07, 0.01]
	C. hottentotus	-1.41 [-1.69, -1.17]	0.04 [0.00, 0.10]
	F. damarensis	-1.41 [-1.67, -1.17]	0.04 [0.00, 0.09]
	F. mechowii	-1.29 [-1.53, -0.99]	0.02 [-0.03, 0.06]
	G. capensis	-1.40 [-1.62, -1.17]	0.02 [-0.01, 0.06]
	H. argenteocinereus	-1.31 [-1.53, -1.05]	0.02 [-0.02, 0.07]
	H. glaber	-1.36 [-1.54, -1.16]	0.02 [-0.01, 0.06]

Supplementary Table 5. Bone superstructures analyzed in this study and their fossorial functional significance. Data obtained from several sources (see Supplementary References 1-23).

Bone	Character	Morpho-Function	References
Humerus (Stylopod)	Deltoid tuberosity (DT)	An enlarged, protuberant and distally located DT increases the area for the insertion of *mm. deltoidei* and *mm. pectorales*, and increases the in-lever arm distance from muscle attachment to joint. This produces a powerful stroke (flexion) of the humerus on the scapula and subsequent retraction of the arm during parasagittal scratch-digging.	1,6,7,9,10,11,13,14,20,21
Ulna (Zeugopod)	Olecranon process (OP)	An enlarged OP increases the area for the insertion of the *mm. triceps brachii,* hence increase the in-lever arm of forearm extensors and enables greater out-forces during scratch-digging.	4,8,17,22,23
Femur (Stylopod)	Third trochanter (TT)	A mediolaterally enlarged and distally positioned TT increases the insertion area for the *m. gluteus superficialis* for powerful leg extension and some degree of abduction (to brace against a tunnel or pushing back soil while digging), as well as increases medioalteral cortical thicknss of the diaphysis, which reduces bending strains on the femoral shaft due to rearward motion.	12,16,18
Tibia-Fibula (Zeugopods)	Distal fusion of tibia-fibula (DFTF)	Distal fusion provides a powerful bony base for the attachment of the muscles acting on the paws, as well as increases stabilization of the foot to better withstand load-bearing and bending strains during heavy-impact activities against a resistant medium such as earth.	2,3,5,6,15,18,19,20

Supplementary Table 6. Ecological and morpho-functional characteristics of fossorial rodents including 17 genera and 35 species, and the non-fossorial closest relatives of Bathyergidae. All fossorial taxa present a well-developed and projected deltoid tuberosity (DT), except *Heterocephalus glaber,* where such trait is highly reduced. Ecological and morphological data obtained from several sources (see Supplementary References 22,24,28,30,38,40-75).

Family	Genus	Species	Locomotor mode	Digging mode	Social organization	DT
Ctenohystrica						
Bathyergidae	*Heterocephalus*	*glaber*	Fossorial	Chisel-tooth	Highly social	No
Bathyergidae	*Heliophobius*	*argenteocinereus*	Fossorial	Chisel-tooth	Solitary	Yes
Bathyergidae	*Bathyergus*	*suillus*	Fossorial	Scratch	Solitary	Yes
Bathyergidae	*Bathyergus*	*janetta*	Fossorial	Scratch	Solitary	Yes
Bathyergidae	*Georychus*	*capensis*	Fossorial	Chisel-tooth	Solitary	Yes
Bathyergidae	*Cryptomys*	*hottentotus pretoriae*	Fossorial	Chisel-tooth	Social	Yes
Bathyergidae	*Cryptomys*	*hottentotus natalensis*	Fossorial	Chisel-tooth	Social	Yes
Bathyergidae	*Cryptomys*	*hottentotus mahali*	Fossorial	Chisel-tooth	Social	Yes
Bathyergidae	*Fukomys*	*damarensis*	Fossorial	Chisel-tooth	Highly social	Yes
Bathyergidae	*Fukomys*	*mechowii*	Fossorial	Chisel-tooth	Highly social	Yes
Hystricidae	*Atherurus*	*macrourus*	Semifossorial	Scratch	Gregarious/Solitary	Yes
Hystricidae	*Atherurus*	*africanus*	Ambulatory		Solitary	Yes
Hystricidae	*Hystrix*	*africaeaustralis*	Semifossorial	Scratch	Gregarious/Social	Yes
Hystricidae	*Hystrix*	*cristata*	Semifossorial	Scratch	Gregarious/Solitary	Yes
Hystricidae	*Hystrix*	*indica*	Semifossorial	Scratch	Gregarious/Solitary	Yes
Petromuridae	*Petromus*	*typicus*	Rock climber		Gregarious/Solitary	Yes
Thryonomyidae	*Thryonomys*	*swinderianus*	Semiaquatic/Semifossorial	Scratch	Gregarious/Solitary	Yes
Ctenomyidae	*Ctenomys*	*flamarioni*	Fossorial	Scratch/Chisel-tooth	Solitary	Yes
Ctenomyidae	*Ctenomys*	*lewisi*	Fossorial	Scratch/Chisel-tooth	Solitary	Yes
Ctenomyidae	*Ctenomys*	*talarum*	Fossorial	Scratch/Chisel-tooth	Solitary	Yes
Ctenomyidae	*Ctenomys*	*rionegrensis*	Fossorial	Scratch/Chisel-tooth	Solitary	Yes
Ctenomyidae	*Ctenomys*	*leucodon*	Fossorial	Scratch/Chisel-tooth	Solitary	Yes
Ctenomyidae	*Ctenomys*	*minutus*	Fossorial	Scratch/Chisel-tooth	Solitary	Yes

Ctenomyidae	*Ctenomys*	*lami*	Fossorial	Scratch/Chisel-tooth	Solitary	Yes
Ctenomyidae	*Ctenomys*	*torquatus*	Fossorial	Scratch/Chisel-tooth	Solitary	Yes
Ctenomyidae	*Ctenomys*	*fulvus*	Fossorial	Scratch/Chisel-tooth	Solitary	Yes
Octodontidae	*Spalacopus*	*cyanus*	Fossorial	Chisel-tooth	Social	Yes
Geomyoidea/Myomorpha						
Geomyidae	*Geomys*	*bursarius*	Fossorial	Scratch	Solitary	Yes
Geomyidae	*Thomomys*	*bottae*	Fossorial	Chisel-Tooth/Scratch	Solitary	Yes
Geomyidae	*Thomomys*	*talpoides*	Fossorial	Chisel-Tooth/Scratch	Solitary	Yes
Geomyidae	*Thomomys*	*mazama*	Fossorial	Chisel-Tooth/Scratch	Solitary	Yes
Geomyidae	*Thomomys*	*towsendii*	Fossorial	Chisel-Tooth/Scratch	Solitary	Yes
Spalacidae	*Myospalax*	*myospalax*	Fossorial	Scratch/Head-Lift	Solitary	Yes
Spalacidae	*Rhizomys*	*pruinosus*	Fossorial	Chisel-Tooth/Scratch	Solitary	Yes
Spalacidae	*Rhizomys*	*sinensis*	Fossorial	Chisel-Tooth/Scratch	Solitary	Yes
Spalacidae	*Rhizomys*	*sumatrensis*	Fossorial	Chisel-Tooth/Scratch	Solitary	Yes
Spalacidae	*Spalax*	*ehrenbergi*	Fossorial	Head-Lift/Chisel-tooth	Solitary	Yes
Spalacidae	*Spalax*	*microphthalmus*	Fossorial	Head-Lift/Chisel-tooth	Solitary/Gregarious	Yes
Spalacidae	*Nannospalax*	*nehringi*	Fossorial	Head-Lift/Chisel-tooth	Solitary	Yes
Cricetidae	*Arvicola*	*(terrestri) scherman*	Fossorial	Chisel-tooth	Solitary	Yes
Cricetidae	*Ellobius*	*lutescens*	Fossorial	Chisel-tooth	Solitary/Gregarious	Yes
Sciuroidea						
Aplodontidae	*Aplodontia*	*rufa*	Fossorial	Scratch	Solitary/Gregarious	Yes

Supplementary Table 7. Morpho-functional indices and body masses (BM) of individuals analyzed in this study. Body mass in grams (g). Relative position of the deltoid tuberosity (RDT); Index of fossorial ability (IFA); Tibio-fibular junction index (TJI).

Species	ID	BM (g)	IFA	RDP	TJI
B. suillus	314	998	0.246	0.596	0.595
B. suillus	365	804	0.266	0.594	0.584
B. suillus	366	748	0.237	0.620	0.584
B. suillus	377	918	0.223	0.583	0.583
B. suillus	717	1110	0.233	0.569	0.553
B. suillus	721	640	0.220	0.585	0.612
B. suillus	911	1152	0.231	0.581	0.598
B. suillus	913	366	0.264	0.572	0.580
B. suillus	938	468	0.259	0.570	0.603
B. suillus	982	422	0.263	0.607	0.602
B. suillus	1085	778	0.253	0.612	0.616
B. suillus	1138	1138	0.248	0.603	0.601
B. suillus	1144	914	0.236	0.584	0.606
B. suillus	1153	882	0.265	0.625	0.590
B. suillus	1155	1066	0.240	0.572	0.621
B. suillus	1163	760	0.261	0.632	0.594
B. suillus	1169	910	0.226	0.608	0.631
B. suillus	1171	1346	0.233	0.616	0.576
B. suillus	1332	958	0.232	0.593	0.595
B. suillus	1336	508	0.258	0.578	0.603
B. suillus	217	1278	0.253	0.586	0.616
B. suillus	220	1726	0.232	0.586	0.602
B. suillus	313	1072	0.243	0.585	0.557
B. suillus	713	1614	0.228	0.606	0.630
B. suillus	765	830	0.257	0.607	0.628
B. suillus	861	1636	0.224	0.593	0.593
B. suillus	910	662	0.246	0.567	0.597
B. suillus	964	584	0.280	0.589	0.608
B. suillus	965	1228	0.251	0.582	0.589
B. suillus	1039	1336	0.215	0.604	0.596
B. suillus	1050	1332	0.243	0.629	0.578
B. suillus	1139	752	0.264	0.557	0.613
B. suillus	1154	780	0.271	0.601	0.628
B. suillus	1338	1450	0.246	0.574	0.614
B. suillus	1339	788	0.252	0.597	0.620
B. suillus	GM282	603	0.250	0.572	0.597
B. suillus	GM283	227	0.234	0.596	0.576
B. suillus	GM284	1201	0.232	0.619	0.588
B. suillus	GM285	658	0.253	0.614	0.593

G.capensis	NB21	141	0.280	0.581	0.554
G.capensis	GM530	121	0.277	0.616	0.510
G.capensis	JO402	180	0.268	0.573	
G.capensis	GM295	260	0.255	0.610	
G.capensis	GM296	105	0.212	0.566	
G.capensis	GM297	185	0.271	0.573	
G.capensis	GM298	210	0.265	0.593	
G.capensis	Z4	225	0.261	0.568	
G.capensis	Z9	223.1	0.292	0.573	
G.capensis	Z10	210.2	0.286	0.594	
G.capensis	Z11	105.8	0.251	0.566	
G.capensis	Z12	169.8	0.247	0.605	
G.capensis	Z22	149	0.290	0.594	
G.capensis	Z23	167	0.249	0.562	
G.capensis	Z25	190	0.227	0.574	
G.capensis	Z27	300.8	0.305	0.581	
G.capensis	Z28	171.1	0.262	0.588	
G.capensis	Z31	235.1	0.295	0.595	
G.capensis	Z32	197.4	0.292	0.614	
G.capensis	Z33	126.6	0.267	0.593	
G.capensis	Z35	170.2	0.273	0.573	
G.capensis	Z36	229.5	0.318	0.587	
G.capensis	Z37	135.5		0.577	
G.capensis	Z38	116.6	0.238	0.552	
G.capensis	Z210	141	0.274	0.562	
G.capensis	Z212	156.7	0.269		
G.capensis	Z214	150.8	0.279	0.557	
G.capensis	Z215	298	0.245	0.536	
G.capensis	Z216	175	0.244	0.563	
G.capensis	Z225	75.49	0.277	0.613	0.514
G.capensis	A01	91.85	0.255	0.567	0.537
G.capensis	A03	89.21	0.269	0.566	0.492
G.capensis	A06	95.99	0.270	0.599	0.490
G.capensis	A19	78.05	0.281	0.584	0.515
G.capensis	A35	164.72	0.270	0.572	0.485
G.capensis	A40	166.18	0.283	0.543	0.536
G.capensis	A43	176.27	0.265	0.632	0.508
G.capensis	A51	163.39	0.292	0.581	0.507
G.capensis	A95	175.86	0.273	0.578	0.500
G.capensis	A97	277.75	0.276	0.634	0.496
G.capensis	A99	284.02	0.281	0.587	0.522
G.capensis	A100	274.39	0.288	0.569	0.544
G.capensis	A115	283.3	0.258	0.613	0.533
G.capensis	A118	272.63	0.263	0.595	0.537
G.capensis	A128	177.39	0.260	0.618	0.484

G.capensis	A130	168.25	0.273	0.578	0.532
G.capensis	A131	100.42	0.281	0.606	0.481
H.argenteocinereus	526	101.4	0.311	0.631	0.530
H.argenteocinereus	26	122	0.293	0.621	0.526
H.argenteocinereus	11	129	0.318	0.631	0.537
H.argenteocinereus	387	130	0.307	0.599	0.487
H.argenteocinereus	27	135	0.289	0.590	0.505
H.argenteocinereus	386	145	0.290	0.622	0.501
H.argenteocinereus	8	149	0.283	0.639	0.508
H.argenteocinereus	6	160	0.291	0.620	0.542
H.argenteocinereus	516	166.5	0.330	0.612	0.549
H.argenteocinereus	361	181	0.291	0.573	0.573
H.argenteocinereus	517	190	0.301	0.627	0.583
H.argenteocinereus	585	206	0.305	0.626	0.548
H.argenteocinereus	377	210	0.345	0.607	0.543
H.argenteocinereus	451	235.8	0.285	0.581	0.559
H.argenteocinereus	5	249	0.303	0.601	0.455
H.argenteocinereus	18	298	0.290	0.598	0.592
H.argenteocinereus	473	231	0.325	0.616	0.589
H.argenteocinereus	476	137.6	0.298	0.637	0.579
H.argenteocinereus	508	225.4	0.352	0.612	0.549
H.argenteocinereus	525	112	0.297	0.598	0.539
H.argenteocinereus	492	138.4	0.318	0.625	0.548
H.argenteocinereus	479	176.2	0.293	0.648	0.550
H.argenteocinereus	244	207.5	0.303	0.600	0.528
H.argenteocinereus	590	251.5	0.326	0.607	0.517
H.argenteocinereus	241	100.2	0.298	0.597	0.497
H.argenteocinereus	242	107.3	0.317	0.611	0.480
H.argenteocinereus	243	218.24	0.281	0.630	0.509
H.argenteocinereus	244	187	0.321	0.584	0.454
C.hottentotus	GM102	51	0.255	0.613	0.483
C.hottentotus	GM103	65	0.247	0.582	0.546
C.hottentotus	GM104	78	0.253	0.611	0.511
C.hottentotus	GM105	78	0.277	0.602	0.515
C.hottentotus	GM106	98	0.291	0.602	0.524
C.hottentotus	GM108	62	0.278	0.569	0.510
C.hottentotus	GM109	110	0.283	0.587	0.539
C.hottentotus	GM110	54	0.259	0.605	0.540
C.hottentotus	GM111	68	0.267	0.612	0.478
C.hottentotus	GM112	61	0.274	0.649	0.519
C.hottentotus	GM114	73	0.291	0.638	0.545
C.hottentotus	GM115	52	0.265	0.564	0.509
C.hottentotus	GM116	89	0.290	0.640	0.554
C.hottentotus	GM117	72	0.283	0.572	0.543
C.hottentotus	GM122	77	0.301	0.567	0.480

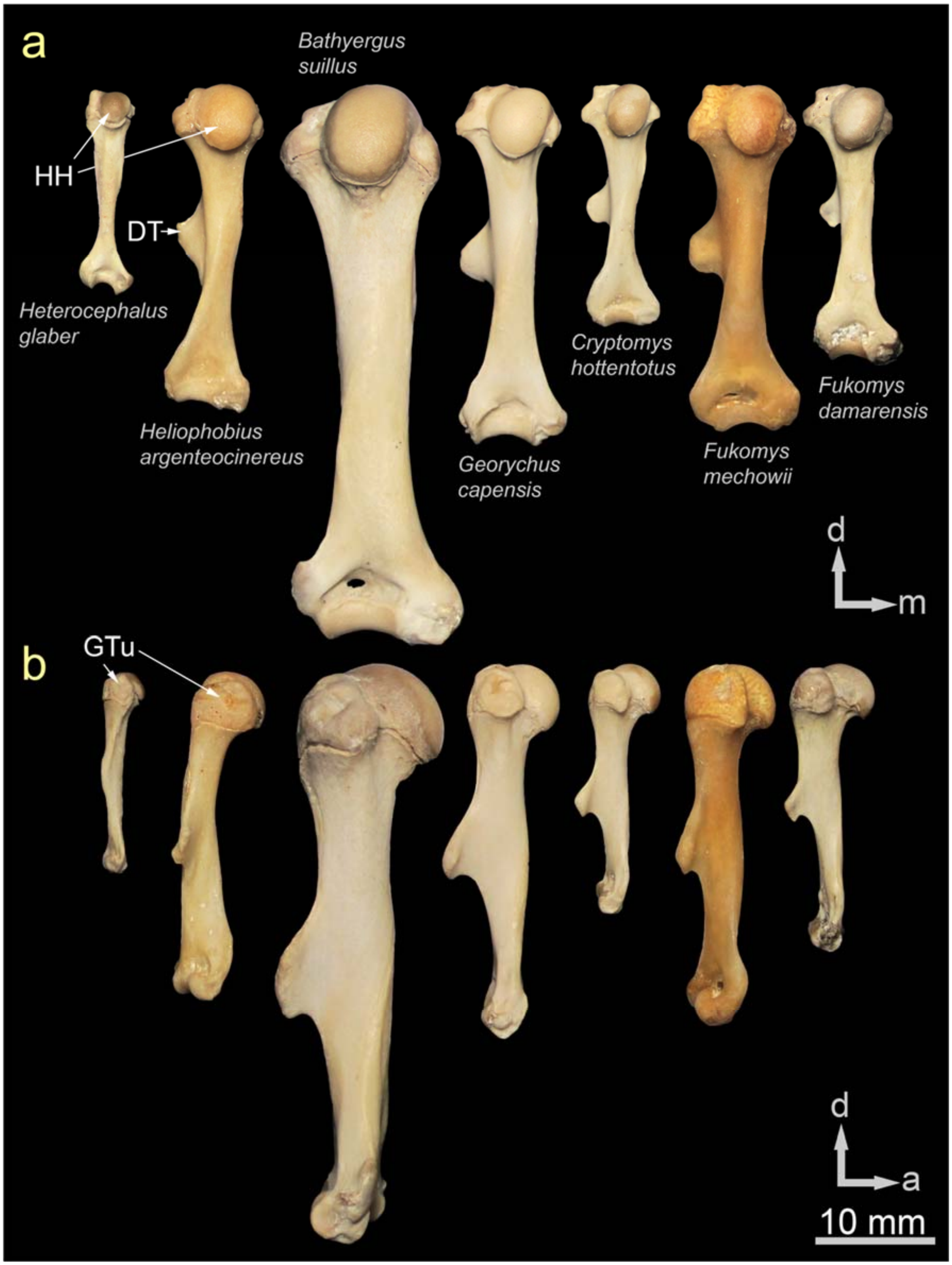
C.hottentotus	GM123	102	0.278	0.595	0.522
C.hottentotus	GM126	67	0.294	0.565	0.563
C.hottentotus	GM127	61	0.290	0.584	0.587
C.hottentotus	GM128	80	0.303	0.613	0.513
C.hottentotus	GM129	130	0.300	0.618	0.569
C.hottentotus	GM136	60.53	0.293	0.581	0.474
C.hottentotus	GM137	76	0.275	0.570	0.509
C.hottentotus	GM138	84	0.296	0.595	0.524
C.hottentotus	GM139	53	0.300	0.588	0.539
C.hottentotus	GM140	54	0.270	0.564	0.527
C.hottentotus	GM142	47	0.276	0.561	0.555
C.hottentotus	GM143	57	0.256	0.571	0.532
C.hottentotus	GM144	71	0.305	0.594	0.528
C.hottentotus	GM145	92	0.260	0.552	0.561
C.hottentotus	GM146	50	0.250	0.607	0.510
C.hottentotus	GM147	68.15	0.263	0.578	0.513
C.hottentotus	GM150	69	0.255	0.571	0.555
C.hottentotus	GM151	70	0.287	0.540	0.533
C.hottentotus	GM152	68	0.256	0.601	0.510
C.hottentotus	GM153	80	0.286	0.611	0.516
F.damarensis	G4F042	87	0.274	0.540	0.506
F.damarensis	G4M018	148	0.260	0.533	0.493
F.damarensis	G4M034	155	0.299	0.563	0.528
F.damarensis	G4M039	141	0.286	0.559	0.497
F.damarensis	G4M041	71	0.281	0.594	0.533
F.damarensis	G4M008	56	0.251	0.530	0.516
F.damarensis	G5F003	71	0.295	0.530	0.561
F.damarensis	L29F002	87	0.299	0.536	0.514
F.damarensis	G4F012	128	0.265	0.529	0.564
F.damarensis	G4F002	133	0.299	0.535	0.553
F.damarensis	G4M009	141	0.318	0.552	0.528
F.damarensis	G3M007	142	0.278	0.533	0.532
F.damarensis	G4M001	147	0.308	0.529	0.536
F.damarensis	G3M001	173	0.298	0.546	0.517
F.damarensis	Z3M006	226	0.305	0.545	0.534
F.damarensis	NB227	67.46	0.278	0.546	0.553
F.damarensis	NB228	63.48	0.256	0.559	0.574
F.damarensis	GAP315	113	0.303	0.567	
F.mechowii	23	133	0.302	0.547	0.535
F.mechowii	179	139	0.325	0.545	0.529
F.mechowii	3	144	0.314	0.538	0.548
F.mechowii	1	158	0.304	0.559	0.536
F.mechowii	177	232	0.278	0.570	0.578
F.mechowii	497	268	0.318	0.592	0.474
F.mechowii	478	380.7	0.303	0.566	0.556

F.mechowii	494	208.8	0.300	0.569	0.501
F.mechowii	589	277.8	0.311	0.557	0.524
F.mechowii	242	405.5	0.295	0.567	0.564
F.mechowii	2	193.4	0.260	0.532	0.590
F.mechowii	531	262.2	0.321	0.570	0.554
H.glaber	JJ-001	32.29	0.245		
H.glaber	JJ-002	14.96	0.246		
H.glaber	JJ-045	56.38	0.256		
H.glaber	JJ-046	16.41	0.265		
H.glaber	1200-047	14.9	0.246		
H.glaber	1200-048	29.84	0.251		
H.glaber	1200-049	19.82	0.288		
H.glaber	1200-050	20.82	0.253		
H.glaber	1200-051	22.41	0.296		
H.glaber	1200-052	16.37	0.267		
H.glaber	1200-053	32.14	0.281		
H.glaber	1200-054	31.5	0.267		
H.glaber	1200-055	26.82	0.260		
H.glaber	1200-056	24.027	0.222		
H.glaber	1200-057	32.47	0.269		
H.glaber	1200-058	30.24	0.279		
H.glaber	1200-059	17.72	0.279		
H.glaber	1200-060	35.81	0.297		
H.glaber	1200-061	39.91	0.247		
H.glaber	1200-063	22.85	0.280		
H.glaber	1200-064	31.29	0.278		
H.glaber	1200-065	32.71	0.287		
H.glaber	1200-066	19.08	0.261		
H.glaber	1200-067	19.72	0.282		
H.glaber	1200-068	23.45			
H.glaber	1200-069	15.29	0.300		
H.glaber	1000-070	31.94	0.275		
H.glaber	1000-071	34.58	0.273		
H.glaber	1000-072	26.77	0.268		
H.glaber	1000-073	28.56	0.281		
H.glaber	1000-074	26.44	0.291		
H.glaber	1000-075	23.95	0.262		
H.glaber	1000-076	29.54	0.258		
H.glaber	1000-077	44.58	0.320		
H.glaber	1000-078	36.08	0.255		
H.glaber	1000-079	23.88	0.271		
H.glaber	1000-080	41.44	0.294		
H.glaber	1000-081	34.45	0.281		
H.glaber	1000-082	43.97	0.302		
H.glaber	1000-083	23.43	0.289		

H.glaber	1000-084	34.49	0.263		
H.glaber	1000-085	27.19	0.254		
H.glaber	1000-086	28.72	0.275		
H.glaber	5000-087	31.06	0.266		
H.glaber	5000-088	22.57	0.264		
H.glaber	5000-089	22.3	0.277		
H.glaber	5000-090	35.17	0.297		
H.glaber	5000-091	28.51	0.259		
H.glaber	5000-092	34.4	0.293		
H.glaber	5000-093	30.4	0.258		
H.glaber	5000-094	33.83	0.275		
H.glaber	5000-095	28.86	0.261		
H.glaber	5000-096	24.63	0.215		
H.glaber	5000-097	31.13	0.292		
H.glaber	5000-098	29.36	0.276		
H.glaber	5000-099	29.82	0.273		
H.glaber	5000-100	21.64	0.297		
H.glaber	5000-101	19.21	0.261		
H.glaber	GM420	22.92	0.264		
H.glaber	GM498	47	0.247		
H.glaber	GM499	66	0.293		
H.glaber	GM500	17.93	0.259		
H.glaber	GM501	63	0.265		
H.glaber	GM505	19.58	0.282		
H.glaber	GM506	16.04	0.263		
H.glaber	GM507	41	0.270		
H.glaber	GM508	35	0.245		
H.glaber	GM509	39	0.272		
H.glaber	GM510	30	0.244		
H.glaber	GM511	33	0.257		

SUPPLEMENTARY FIGURES

Supplementary Figure 1. Humeral phenotype of African mole-rats analyzed here. a) Posterior view. b) Lateral view. Bones ordered same as in "a". Abbreviations: anterior (a); deltoid tuberosity (DT); dorsal (d), greater tubercle (GTu); humeral head (HH); medial (m).



SUPPLEMENTARY METHODS

Ontogenetic stages

Individuals were classified as newborns, pups, and adults based on chronological age, patterns of molar eruption and tooth wear, and degree of skeletal development (Supplementary Table 1). The ontogeny of *H. argenteocinereus* and *F. mechowii* was based on chronological age. Gomes Rodrigues et al. (76) described that the third molar of *H. argenteocinereus* erupts after the second month of life and the full cheek teeth (four molars) are already developed at two years old, so that individuals older than two years in this study were considered adults and assumed to have developed the fourth molar. Similar classification was used for *F. mechowii*. Newborns are one day old and pups are a few days old. For the rest of the species, individuals having full eruption of all upper or lower molars were considered adults. Almost all genera have four molars (77-80), although *Heterocephalus* has three (sometimes two) (11,81) and some populations of *Heliophobius argenteocinereus* exhibit 4-7 molars and continuous dental replacement (76,82,83). Determination of molar eruption in *Bathyergus* was based on Hart et al. (79) and Montoya-Sanhueza et al. (84): age-classes 5-9 are considered as adults. The classification of *F. damarensis* was based on patterns of molar eruption described for *Fukomys mechowii*: age-classes 5-9 were considered as adults (80). In *Cryptomys hottentotus*, individuals of age-class 3-4 are considered as adults (78). Individuals of *H. glaber* with full molar eruption were considered adults (85). For younger ontogenetic stages (pups), other anatomical features indicating skeletal immaturity were used, including poor development of secondary centers of ossification, presence of chondroepiphyses and unfused distal epiphysis in the humerus (84). Perinatal individuals of unknown age were determined as newborns/pups based on their very small size and incipient skeletal development.

Bone superstructures

Presence/absence of bone superstructures are presented in Supplementary Table 1. Among the bone superstructures analyzed, the projected and distally located DT is one of the most extensively studied adaptations among fossorial animals, which is principally adapted to accommodate enlarged pectoral and deltoid muscles to increase the power-stroke (retraction) of the arm (Supplementary Table 5). This structure is often referred to in multiple ways, such as tubercle, crest, ridge or process, although proper definition of such terms and the differences among them are rather ambiguous. We define the deltoid tuberosity (= tubercle/process) as a localized and conspicuous protrusion of bone projecting from the diaphysis, with a variable location and size in the diaphysis among mammals. The DT differs from a deltoid crest (DC) (= ridge), which represents an extended bony surface along the diaphysis associated with a wide muscular attachment, but usually not forming a localized protuberance. The DC is observed in some taxa such as tubulidentates, hystricids, tenrecids and solenodontids (34,86). Such structures are not mutually exclusive and a DC can appear at the proximal region of the diaphysis (below the greater tubercle) and extend towards the middle part of the diaphysis fusing with the DT around the midshaft (24), as occurs in hystricids. Two conditions for the DT were recorded in this study: i) the humerus has a smooth diaphyseal surface lacking a projected DT (but not precluding of showing a reduced DT, a small scar for the attachment of the *mm. deltoidei* or a DC); and ii) the humerus has a diaphysis with a conspicuously localized and projected DT.

Regarding the DFTFi, this character has typically been associated with fossoriality, although it is not exclusive to fossorial taxa. Barnett and Napier (19) analyzed the type of tibio-fibular articulation of a wide variety of mammals and found that the fibula of fossorial and aquatic mammals is immobile and united to the tibia at its upper and lower ends by bone (or fibrous) tissue, thus conferring increased robustness and rigidness (Supplementary Table 5). Two conditions were measured: i) tibia and fibula are not distally fused (non-ossified); and ii) tibia and fibula are distally fused and ossified.

Regarding the OP and TT, these features are easily recognizable bony projections, the first located at the proximal ulna, beginning at the base of the anconeal process, and the second located in the proximal femur between the greater trochanter and the midshaft region. Two conditions for these features were recorded, presence or absence, regardless of their cartilaginous or ossified tissue condition.

Morpho-functional indices

Seven linear measurements were used to calculate morpho-functional indices: total lengths of humerus (HL), ulna (UL) and tibia-fibula (TL); length of the deltoid tuberosity (DLH); length of the olecranon process (OL), functional length of the ulna (FUL) and length of the distal tibio-fibular junction (DTFJ). Total bone lengths are the maximum distance from the proximal articular surface to the distal articular surface. OL is the length from the tip of the olecranon to the center of the trochlear notch. FUL is the difference between UL and OL. DLH and DTFJ were measured from the proximal articular surface of the bone to the distal origin of the deltoid tuberosity and to the tibio-fibular junction, respectively. All measurements were recorded to the nearest 0.01 mm using a digital caliper. The relative position of the deltoid tuberosity (RDT = DLH/HL) and the index of fossorial ability (IFA = OL/FUL) were calculated following a previous study and references therein (84) (Supplementary Table 7). The tibio-fibular junction index (TJI = DTFJ/TL) is a novel ecomorphological index modified from Montoya-Sanhueza et al. (84) and implemented for the first time in this study to reflect the extension of the distal tibio-fibular fusion, so that lower values (i.e. a more proximal and larger fusion of the tibia and fibula) would suggest a longer bony base and more robust bone diaphysis to increase bone resistance to muscles acting on the paws.

Phylogenetic varying effects regression

The amount of change in a given index, for example RDT, in response to a one unit increase in BM for individual *i* belonging to species *j*, was modelled as:

$$
\begin{gathered}
logRDT_i \sim Normal(\mu_i, \sigma) \\
\mu_i = \alpha_{j[i]} + \beta_{j[i]} logBM_i + \varepsilon_{j[i]} \\
\alpha_j \sim MVNormal(\mu_\alpha, S_\alpha) \\
S_\alpha = \sigma_{phy_\alpha} R \\
\beta_j \sim MVNormal(\mu_\beta, S_\beta) \\
S_\beta = \sigma_{phy_\beta} R \\
\varepsilon_j \sim Normal(0, \sigma_{spp})
\end{gathered}
$$

with intercepts α_j, i.e. species mean phenotypes, and slopes β_j, i.e. species scaling effects, drawn from multivariate Gaussian distributions, where μ_α and μ_β are intercept mean and slope mean, and S_α and S_β are covariance matrices for species' intercepts and slopes, respectively. Covariance in both intercepts and slopes was defined as the product of a phylogenetic correlation matrix R, with expected correlations among species determined by an Ornstein-Uhlenbeck model of trait evolution (87,88), and variance parameter σ_{phy}, giving the magnitude of phylogenetic effect (89). Species-specific effects were captured by a vector of residuals, where each species j had its own residual ε_j, modeled as a normally distributed random variable with mean zero and standard deviation σ_{spp}, giving an overall magnitude of species-specific effects, or in other words, the variation unaccounted for by the phylogenetic component (90,91).

We assigned regularizing priors to all sampled parameters, which reduce the risk of overfitting the data and give more accurate predictions (92). Priors for the sampled parameters were drawn from the following distributions:

$$
\begin{gathered}
\mu_\alpha \sim Normal(0{,}0.5) \\
\mu_\beta \sim Normal(0{,}0.5) \\
\sigma \sim Exponential(2) \\
\sigma_{phy_\alpha} \sim Exponential(2) \\
\sigma_{phy_\beta} \sim Exponential(2) \\
\sigma_{spp} \sim Exponential(2)
\end{gathered}
$$

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