Table S1 – *Monodelphis* species and laboratory strains surveyed in this study. The sample size (N) associated with each species/strain is reported on the second column. Strain names correspond to the strain identifications at the Texas Biomedical Research Institute.

Strain Name	N
ATHH2/AH11L	15
ATHL/ATHLH	2*
FD2M	14
FD2M1	13
FD2M2	11
FD2M4	12
FD3	13
FD4	13
FD5	12
FD6	10
FD7	15
FD8X	7
LL1	19
LL2	15
LSD	15
PBP	13

Species Name	N
Monodelphis domestica	92
Monodelphis glirina	77
Monodelphis palliolata	46
Monodelphis brevicaudata	28
Monodelphis arlindoi	14
Monodelphis touan	12
Total	468

* Removal of ATHL/ATHLH results in a virtually identical G-matrix estimate

Table S2 – Linear measurements used to represent overall cranial morphology. The association between each measurement and the developmental/functional regions of the mammalian cranium is illustrated in the second column. Landmark abbreviations correspond to the ones in Figure 1.

Measurement	Region	Measurement	Region
IS-PM	Face	PT-EAM	Neurocranium
IS-NSL	Face	PT-ZYGO	Face
IS-PNS	Face	PT-TSP	Neurocranium, Face
PM-ZS	Face	ZS-ZI	Face
PM-ZI	Face	ZI-MT	Face
PM-MT	Face	ZI-ZYGO	Face
NSL-NA	Face	ZI-TSP	Face
NSL-ZS	Face	MT-PNS	Face
NSL-ZI	Face	PNS-APET	Neurocranium
NA-BR	Neurocranium	APET-BA	Neurocranium
NA-PNS	Face	APET-TS	Neurocranium
BR-PT	Neurocranium	BA-EAM	Neurocranium
BR-APET	Neurocranium	EAM-ZYGO	Face
PT-APET	Neurocranium	ZYGO-TSP	Face
PT-BA	Neurocranium	BA-OPI	Neurocranium

Table S3- Summary of factors that were controlled for in each species. We tested the effect of these factors on trait means using multivariate analyses of variance (MANOVA). Whenever significant (p<0.05), the effects of these factors were controlled for. SX=sex; A=age; * =interaction between two factors; df=degrees of freedom.

Dataset	Controlled variable	Wilk's λ/df (Sex)	Wilk's λ/df (Age)	Wilk's λ/df (Sex * Age)
Monodelphis domestica	SX,A	0.356/30.59	0.294/60,118	
Monodelphis glirina	SX,A, SX*A	0.281/30,42	0.19/60,84	0.25/60,84
Monodelphis palliolata	SX,SX*A	0.057/30,13		0.022/60,26
Monodelphis brevicaudata				