

Fig. S1

Fig. S1. (A) Landmarking and linear measurements. (B) A snapshot of the Landmark program with loaded specimens.

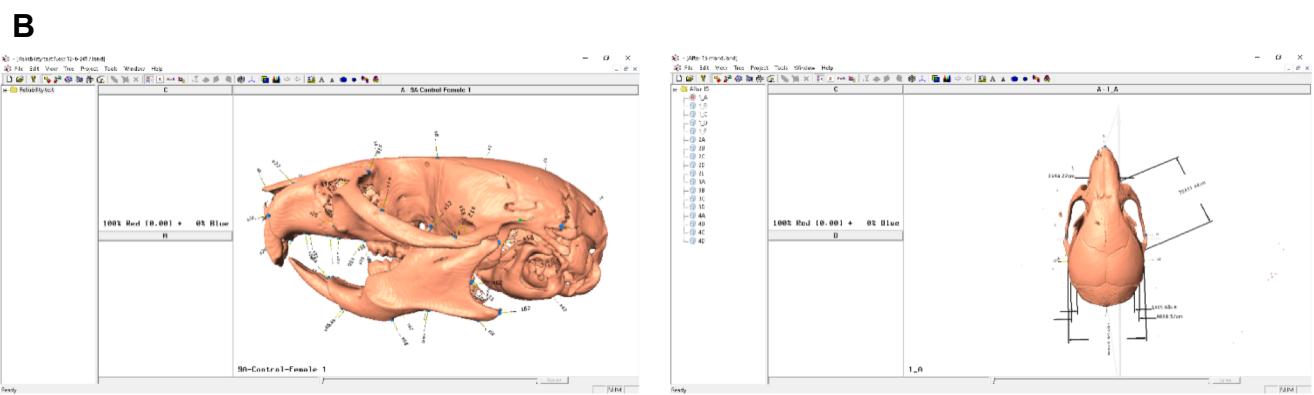
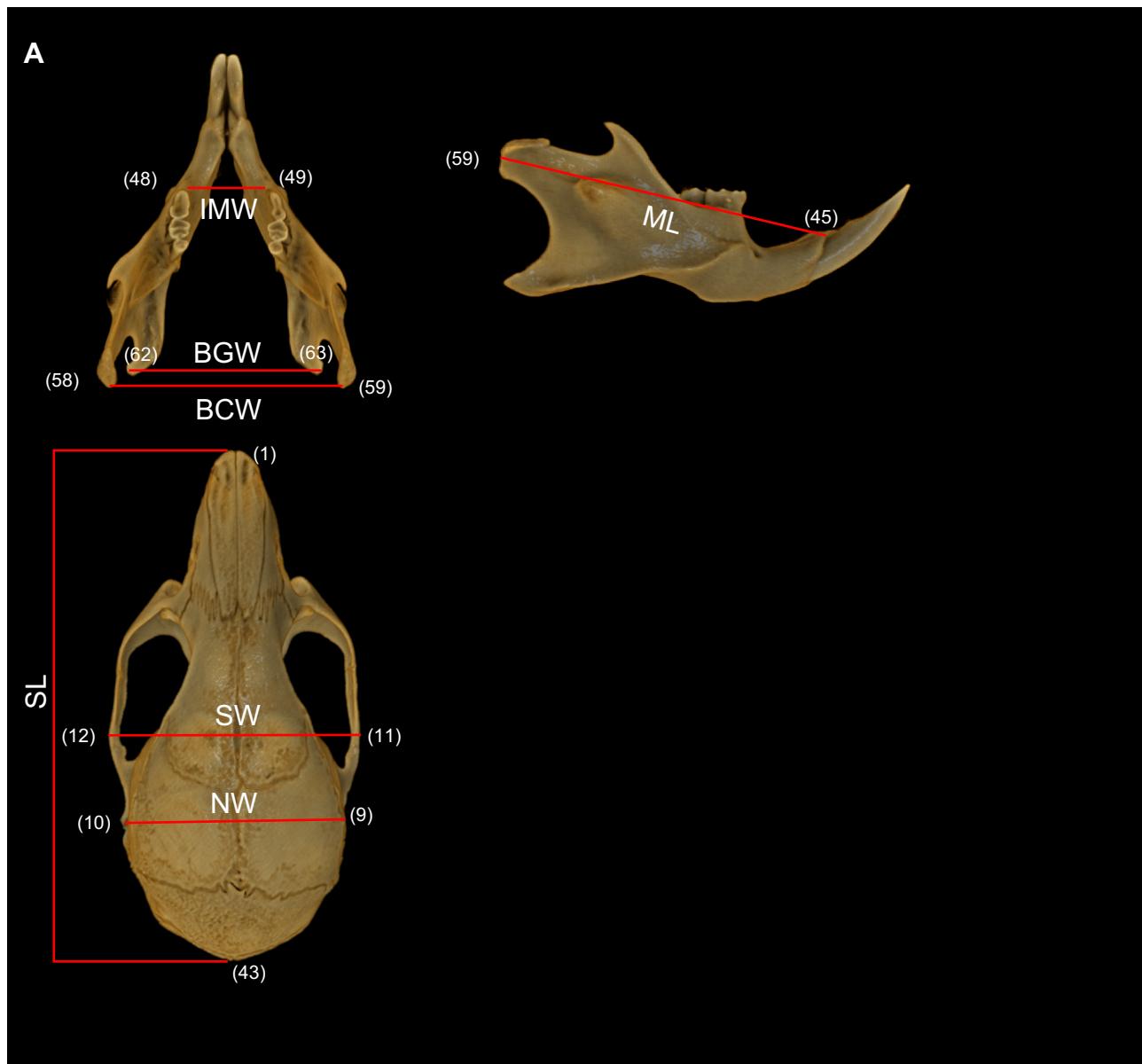


Table S1

Table S1. Determination of statistically significant shape differences for the mouse cranium, mandible, and condyle.

Procrustes ANOVA

	Effect	SS	MS	df	F	P-value
Cranium	Centroid Size	45702003.490723	15234001.16357	3	14.72	< 0.0001
	Shape	0.00526248	0.0000269871	195	6.34	<0.0001
Mandible	Centroid Size	17609239.190990	5869746.396997	3	16.76	<0.0001
	Shape	0.00727317	0.0000692683	105	5.49	<0.0001
Condyle	Centroid Size	1067152.739130	355717.579710	3	2.53	0.0723
	Shape	0.05558199	0.0001295618	429	2.98	<0.0001

Sums of squares (SS), mean squares (MS), degrees of freedom (df), and Goodall's F statistic (F).

Mahalanobis distances among groups

		Con (HD)	F15SD-F1HD	F15SD
Cranium	F15SD-F1HD	15.1479*		
	F15SD	9.8843*	13.4091*	
	F1SD	17.5256*	5.9188*	16.6211*
Mandible	F15SD-F1HD	23.2906*		
	F15SD	14.7058*	29.0896*	
	F1SD	31.5735*	38.0982*	32.2284*
Condyle	F15SD-F1HD	8.9554*		
	F15SD	9.3830*	7.3755*	
	F1SD	12.2569*	7.2336*	8.0526*

P value <0.0001*

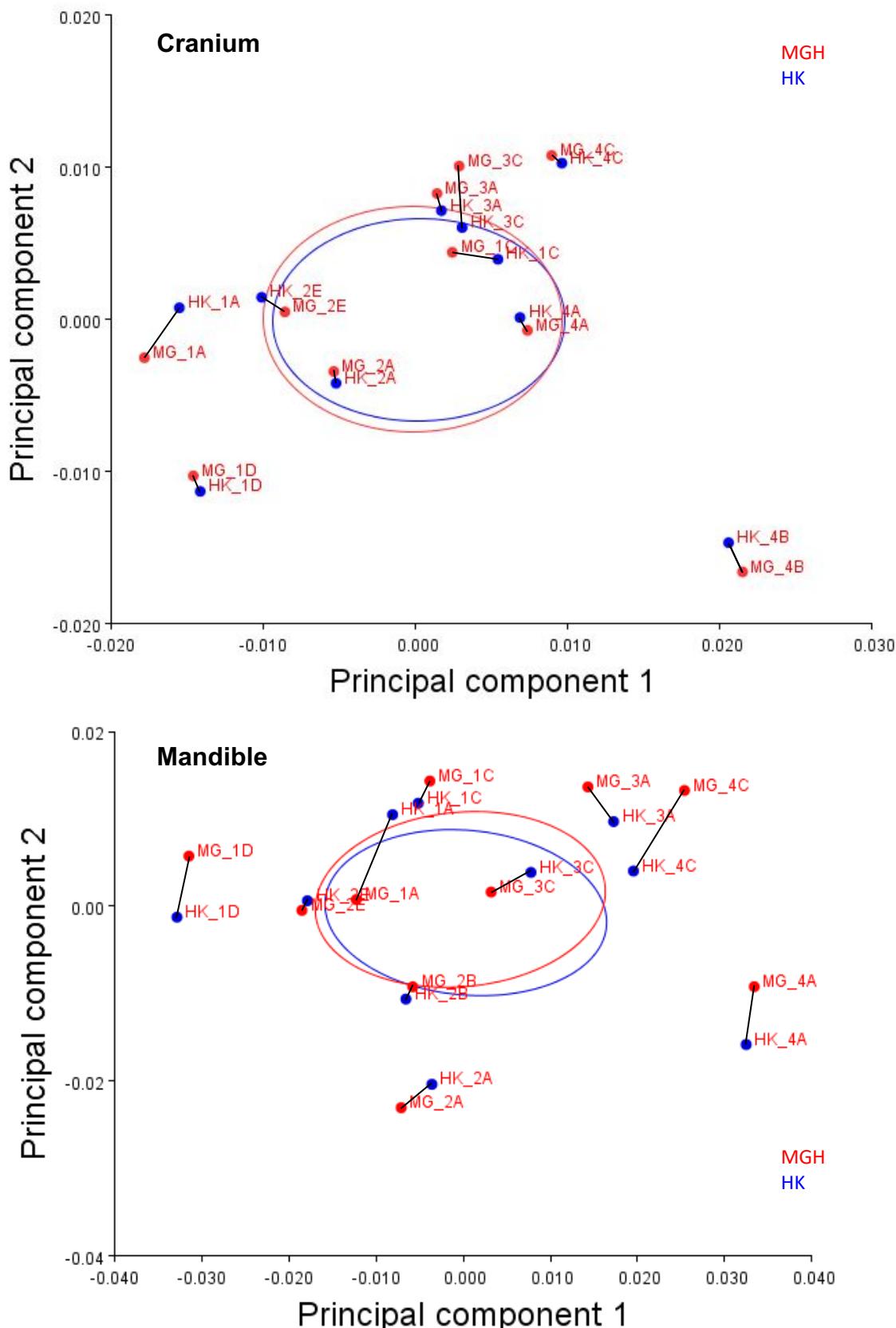
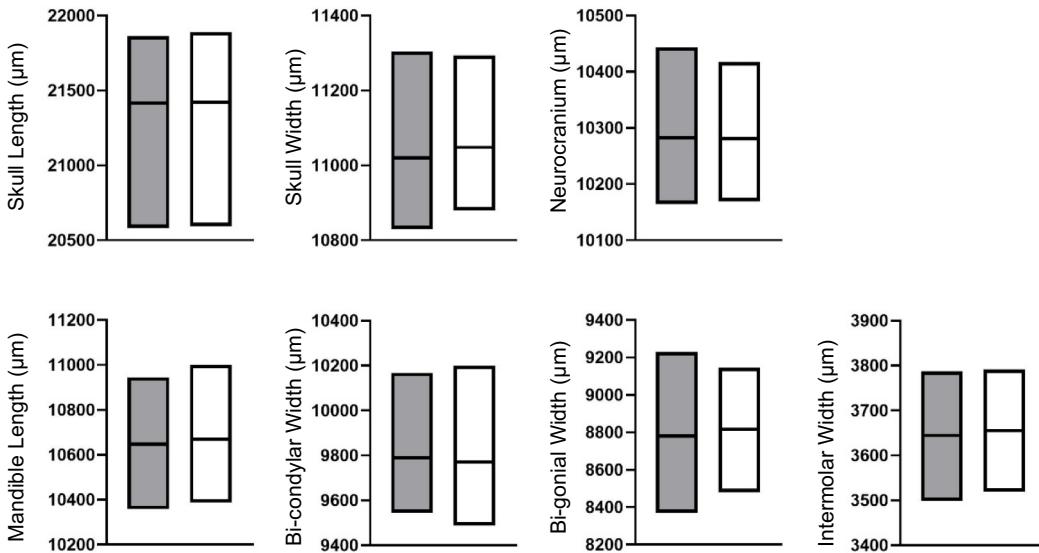
Fig. S2

Fig. S2. Example of the inter-reliability test between observers MGH and HK demonstrating the consistency of landmarking in the cranium and mandible.



Paired t-test applied to the linear variables demonstrates little or no intra-examiner error.

Score/timing	Number	Mean	SD	P value
Skull Length (SL)	7	21417	432.6	0.7669
1 st Time	7	21423	441.5	
Skull Width (SW)	7	11021	153.8	0.1348
1 st Time	7	11048	127.4	
Neurocranium Width (NW)	7	10282	102.8	0.9040
1 st Time	7	10280	91.62	
Mandible Length (ML)	7	10648	206	0.1145
1 st Time	7	10669	223.8	
Bi-condylar Width (BCW)	7	9790	240.1	0.2666
1 st Time	7	9771	264.1	
Bi-gonial Width (BGW)	7	8780	340	0.3599
1 st Time	7	8816	267.9	
Intermolar Width (IMW)	7	3644	101.3	0.0671
1 st Time	7	3655	103.1	

Bland-Altman method applied to the linear variables demonstrates little or no intra-examiner error.

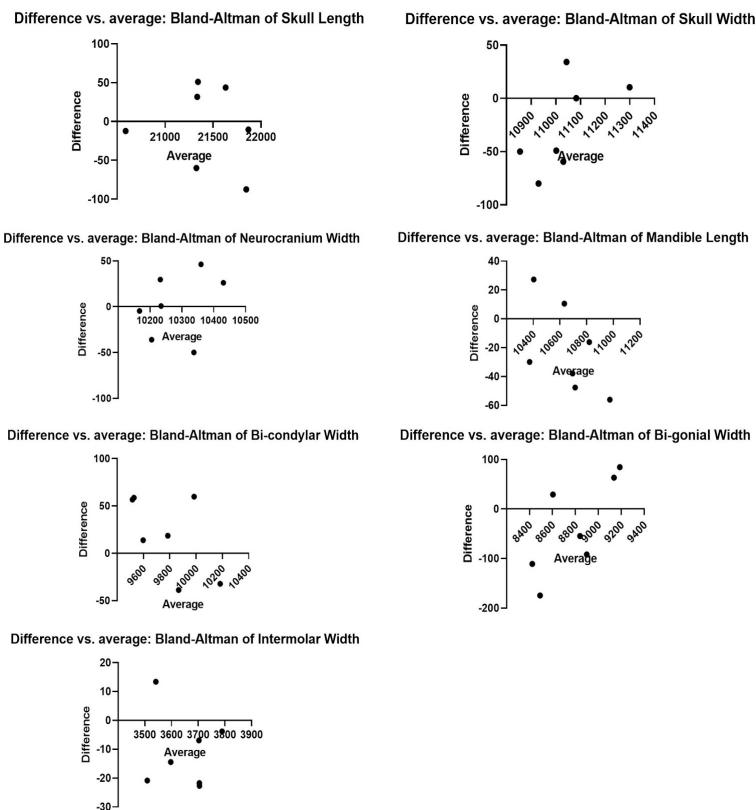


Fig. S3. Paired t-test and Bland-Altman method applied to the linear measurements to evaluate intra-observer reliability.

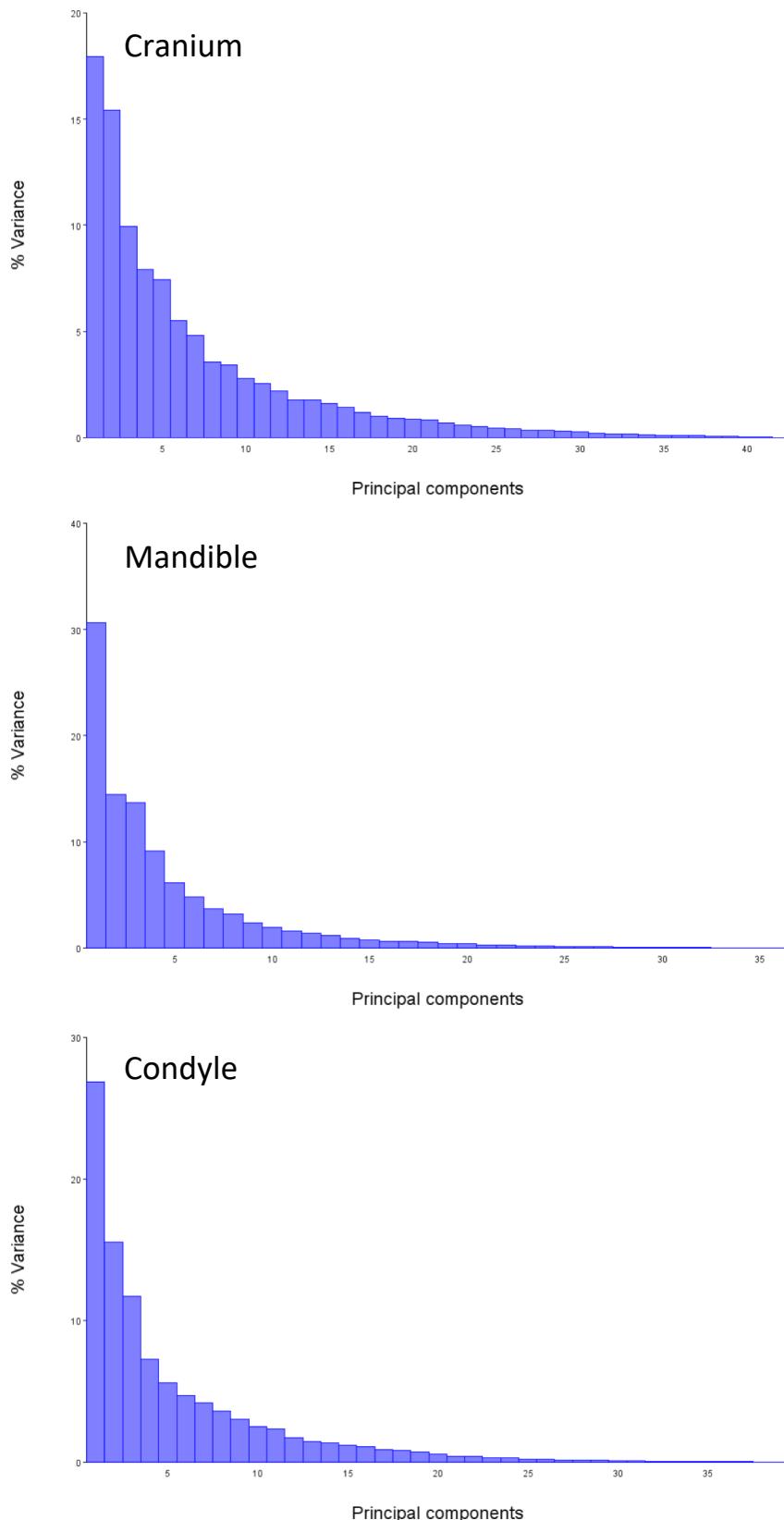
Fig. S4

Fig. S4. The percentage of variance in all the principal components of the cranium, mandible, and condyle.

Fig. S5

