Supplementary Information

Figure S1. Phylogenetic Principal Component Analysis of Hipposideridaes' brain structure proportions. Regression on independent contrasts of logged absolute brain size onto independent contrasts of position on PC1: Multiple R-squared: 0.621, F-statistic: 29.54 on 1 and 18 DF, $P = 3.654 \times 10^{-5}$; PC2: Multiple R-squared: 0.173, F-statistic: 3.771 on 1 and 18 DF, $P = 0.06795$.

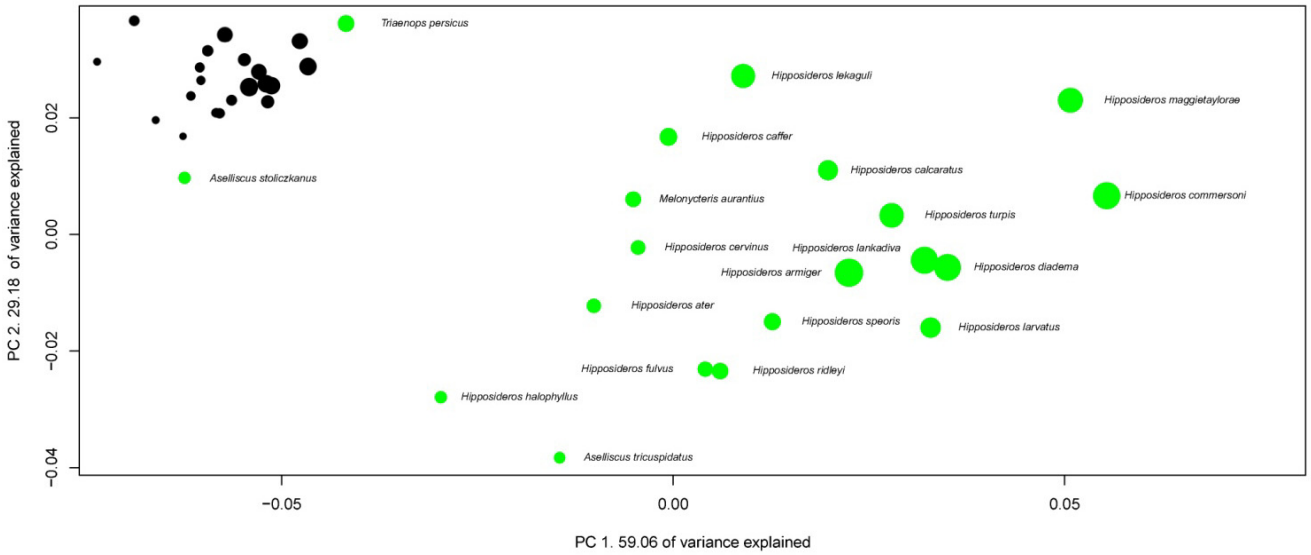

Figure S2. Phylogenetic Principal Component Analysis of Molossidaes' brain structure proportions. Regression on independent contrasts of logged absolute brain size onto independent contrasts of position on PC1: Multiple R-squared: 0.0221, F-statistic: 0.3384 on 1 and 15 DF, $P = 0.5694$; PC2: Multiple R-squared: 0.705, F-statistic: 35.86 on 1 and 15 DF, $P = 2.486 \times 10^{-5}$.

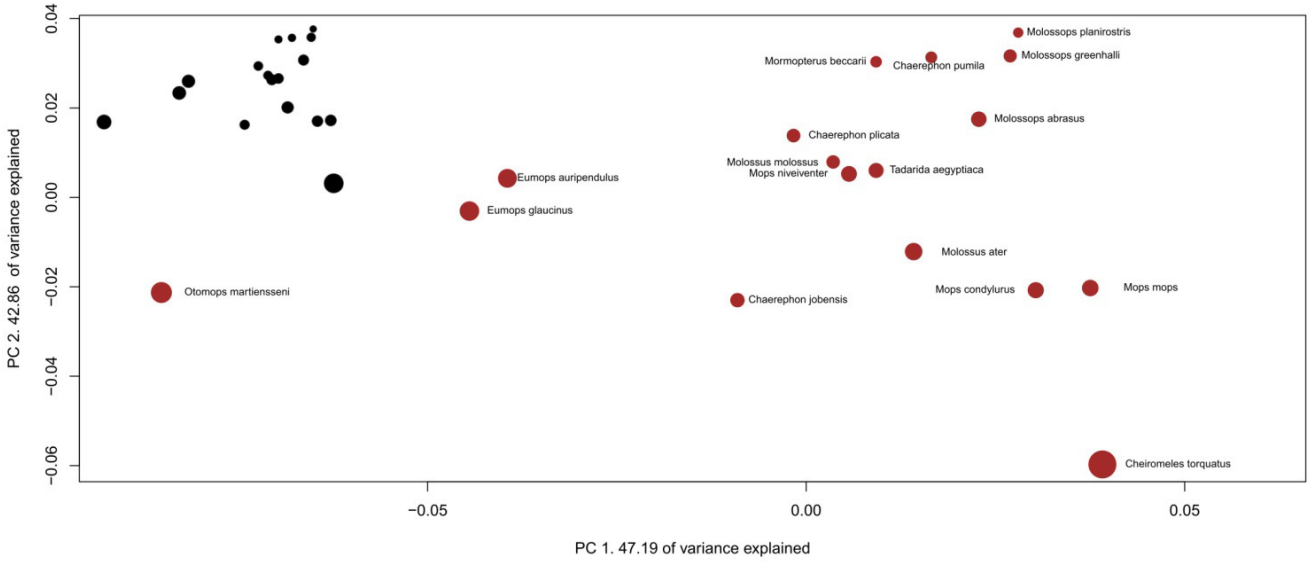

Figure S3. Phylogenetic Principal Component Analysis of Emballonuridaes' brain structure proportions. Regression on independent contrasts of logged absolute brain size onto independent contrasts of position on PC1: Multiple R-squared: 0.0095, F-statistic: 0.1437 on 1 and 15 DF, $P = 0.71$; PC2: Multiple R-squared: 0.4503, F-statistic: 12.29 on 1 and 15 DF, $P = 0.003189$.

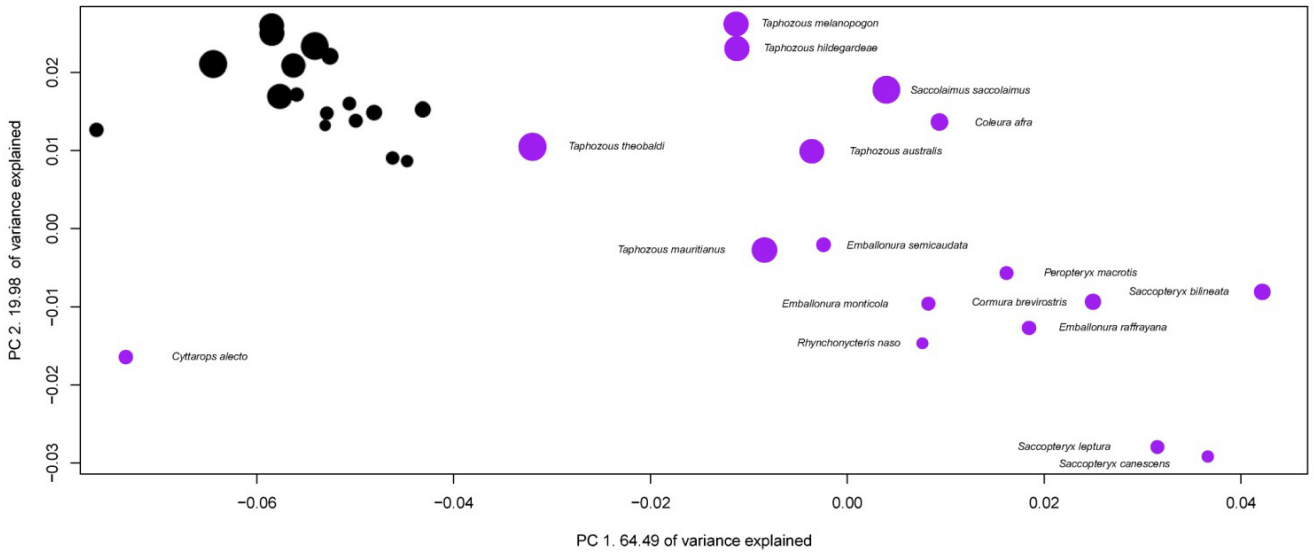

Figure S4. Phylogenetic Principal Component Analysis of Phyllostomidaes' brain structure proportions. Regression on independent contrasts of logged absolute brain size onto independent contrasts of position on PC1: Multiple R-squared: 0.0770, F-statistic: 4.006 on 1 and 48 DF, $P = 0.051$; PC2: Multiple R-squared: 0.1223, F-statistic: 6.69 on 1 and 48 DF, $P = 0.01278$.

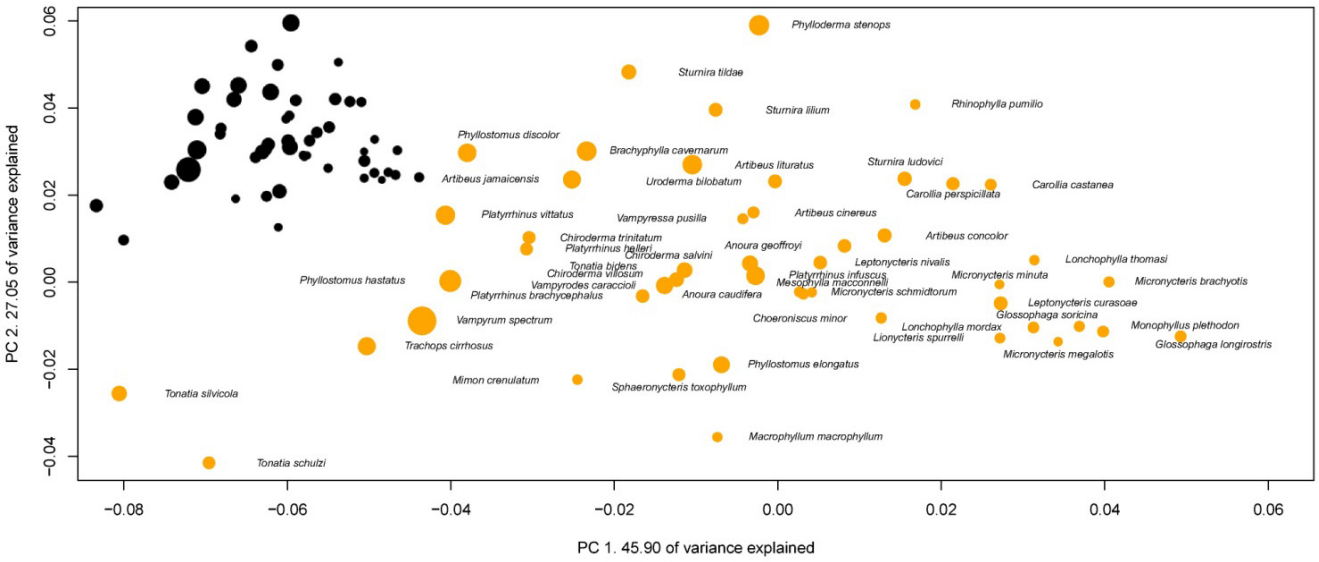

Table S1. Loadings of the brain structures for the five first principal components of PPCA for each taxon of the Figures S1 to S4. Scores higher than 0.5 are highlighted in grey.

	PC 1	PC 2	PC 3	PC 4	PC 5		PC 1	PC 2	PC 3	PC 4	PC 5	
	45.897	**27.050**	**15.118**	**5.943**	**1.960**	**% variance**	**47.191**	**42.858**	**4.430**	**1.749**	**1.416**	
	0.138	−0.834	−0.462	0.008	−0.160	**Medulla**	0.203	0.906	0.247	−0.194	−0.049	
	0.308	−0.492	0.809	0.086	−0.012	**Cerebellum**	−0.997	−0.074	0.011	0.016	−0.001	
	0.045	−0.792	−0.442	0.155	0.351	**Mesencephalon**	0.238	0.805	0.467	0.152	0.054	
	−0.219	−0.356	−0.463	−0.003	−0.280	**Diencephalon**	0.720	0.097	−0.069	0.062	0.551	
	−0.176	0.399	−0.210	−0.026	−0.506	**Striatum**	0.411	−0.365	−0.493	0.103	0.479	
	0.409	0.514	−0.236	−0.325	−0.117	**Septum**	0.428	0.286	−0.631	−0.121	0.126	
	0.483	0.740	−0.148	0.394	−0.040	**Paleocortex**	0.611	0.408	−0.119	0.531	−0.337	
	0.661	0.363	0.025	−0.635	0.096	**Hippocampus**	0.510	0.438	−0.571	−0.215	−0.240	
	0.210	0.556	0.051	−0.511	0.028	**Schizocortex**	−0.089	0.236	0.026	−0.679	−0.268	
	−0.991	0.092	0.083	−0.018	0.021	**Neocortex**	0.226	−0.964	0.135	−0.016	−0.027	
	0.412	0.798	0.057	0.304	0.129	**Olfactory bulb**	0.498	−0.187	−0.691	0.013	−0.043	

Phyllostomidae — **Molossidae**

	PC 1	PC 2	PC 3	PC 4	PC 5		PC 1	PC 2	PC 3	PC 4	PC 5	
	64.493	**19.982**	**6.350**	**4.209**	**1.994**	**% variance**	**59.057**	**29.180**	**4.883**	**3.152**	**2.435**	
	−0.321	−0.485	0.743	−0.323	0.030	**Medulla**	−0.788	−0.453	0.348	0.211	0.065	
	−0.993	0.080	−0.036	0.065	0.031	**Cerebellum**	−0.669	0.742	−0.008	−0.034	0.021	
	0.223	−0.920	−0.305	−0.024	0.041	**Mesencephalon**	−0.530	−0.643	0.210	−0.503	−0.029	
	0.399	−0.587	−0.458	−0.039	0.220	**Diencephalon**	0.506	−0.677	−0.206	−0.261	0.124	
	0.339	0.239	0.234	0.255	−0.230	**Striatum**	0.512	−0.388	−0.577	−0.215	0.307	
	0.639	−0.009	0.172	0.260	−0.344	**Septum**	0.124	−0.714	−0.330	−0.171	−0.188	
	0.902	0.271	0.119	0.238	0.187	**Paleocortex**	0.721	−0.475	−0.335	0.147	0.292	
	0.506	−0.204	0.104	−0.108	−0.693	**Hippocampus**	−0.565	−0.353	−0.453	0.167	−0.551	
	0.521	0.376	−0.065	0.510	−0.426	**Schizocortex**	0.172	−0.200	0.059	0.444	−0.605	
	0.283	0.785	−0.313	−0.451	−0.003	**Neocortex**	0.933	0.310	0.171	−0.017	−0.057	
	0.203	0.650	0.141	−0.177	0.363	**Olfactory bulb**	0.760	0.263	−0.157	0.299	0.371	

Emballonuridae — **Hipposideridae**