

Supplementary Materials for ‘Equivocal evidence for a link between megalencephaly-related genes and primate brain size evolution’

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Supplementary Data Guide

Supplementary Table S1. Additional results for Aim 2: Testing whether selection pressure on megalencephaly-associated genes is lined to measures of primate brain size when *Callithrix* and *Microcebus* are excluded

Lambda values, coefficient estimates (for the predictors in the third row of table), and associated p-values are provided for 4 models for each gene, including:

Absolute brain size models

- 1) $\log(\text{brain size}) \sim \log(dN/dS)$
- 2) $\log(\text{brain size}) \sim \log(dN) + \log(dS)$

Relative brain size models

- 3) $\log(\text{brain size}) \sim \log(\text{body size}) + \log(dN/dS)$
- 4) $\log(\text{brain size}) \sim \log(\text{body size}) + \log(dN) + \log(dS)$

There is of a significant association between dN/dS and absolute for *GPC3* and *TBC1D7*. Significant p-values ($p < 0.05$) are in bold. Est = coefficient estimate; N spp = number of species included in models. *Models were run with lambda = 1 since log-likelihood plots of lambda were very flat.

Supplementary Table S2. Root-to-tip dN/dS, dN, and dS values for candidate genes 1-8

This table contains root-to-tip dN/dS, dN, and dS values for 8 of the 16 candidate genes: *AKT1*, *AKT3*, *BRWD3*, *CCND2*, *EXT2*, *GPC3*, *HEPACAME*, *KIF7*. These values were obtained from PAML branch models, provided in the methods section. Gray boxes containing 'NA' values indicate instances in which exon sequences could not be aligned for the respective species (due to extensive gaps in that area of the genome).

Supplementary Table S3. Root-to-tip dN/dS, dN, and dS values for candidate genes 9-16

This table contains root-to-tip dN/dS, dN, and dS values for 8 of the 16 candidate genes: *MTOR*, *OFD1*, *PIK3CA*, *PTEN*, *RIN2*, *SPRED1*, *STRADA*, *TBC1D7*. These values were obtained from PAML branch models, provided in the methods section. Gray boxes containing 'NA' values indicate instances in which exon sequences could not be aligned for the respective species (due to extensive gaps in that area of the genome).

Supplementary Table S4. Accession numbers for candidate genes 1-8

This table contains accession numbers for sequences used in analyses for 8 of the 16 candidate genes: *AKT1*, *AKT3*, *BRWD3*, *CCND2*, *EXT2*, *GPC3*, *HEPACAME*, *KIF7*. Gray boxes containing 'NA' values indicate instances in which exon sequences could not be aligned for the respective species (due to extensive gaps in that area of the genome).

Supplementary Table S5. Accession numbers for candidate genes 9-16

This table contains accession numbers for sequences used in analyses for 8 of the 16 candidate genes: *MTOR*, *OFD1*, *PIK3CA*, *PTEN*, *RIN2*, *SPRED1*, *STRADA*, *TBC1D7*. Gray boxes containing 'NA' values indicate instances in which exon sequences could not be aligned for the respective species (due to extensive gaps in that area of the genome).

Supplementary Table S6. Brain and body mass for 23 primate species

This table contains brain and body masses are provided in grams, and sources for these data (in addition to any relevant notes) are also listed.

Supplementary Files

Each '*gene_name_seq.phy*' file contains the alignment compiled for that candidate gene using Geneious (see Methods).

Supplementary Table S1. Additional results for Aim 2: Testing whether selection pressure on megalencephaly-associated genes is linked to measures of primate brain size when *Callithrix* and *Microcebus* are excluded

Gene	N spp	Absolute brain size											Relative brain size										
		dN/dS				dN				dS			dN/dS				dN				dS		
		Lambda	Est	P-value	P-adj	Lambda	Est	P-value	P-adj	Est	P-value	P-adj	Lambda	Est	P-value	P-adj	Lambda	Est	P-value	P-adj	Est	P-value	P-adj
<i>AKT1</i>	19	1.000	-0.012	0.911	0.991	1.000	0.691	0.714	0.891	0.285	0.700	0.912	1.000*	0.001	0.986	0.986	1.000*	-0.659	0.563	0.800	-0.259	0.565	0.879
<i>BRWD3</i>	20	1.000	1.801	0.438	0.991	1.000	1.862	0.431	0.891	0.497	0.912	0.912	1.000*	0.901	0.494	0.916	1.000*	0.899	0.509	0.800	-0.935	0.718	0.905
<i>CCND2</i>	21	1.000	0.032	0.921	0.991	1.000	0.070	0.823	0.891	-2.055	0.185	0.518	1.000*	0.051	0.779	0.916	1.000*	0.057	0.759	0.800	-0.408	0.666	0.905
<i>EXT2</i>	21	1.000	0.014	0.990	0.991	1.000	0.093	0.932	0.932	-1.885	0.457	0.861	1.000*	0.172	0.777	0.916	1.000*	0.158	0.800	0.800	0.152	0.919	0.919
<i>GPC3</i>	16	0.799	1.637	0.017	0.119	0.906	1.883	0.012	0.168	-0.714	0.455	0.861	1.000*	0.316	0.473	0.916	0.443	0.571	0.131	0.761	0.124	0.776	0.905
<i>HEPACAM</i>	20	1.000	-0.098	0.686	0.991	1.000	0.082	0.827	0.891	-1.438	0.556	0.865	1.000*	0.039	0.776	0.916	1.000*	0.067	0.755	0.800	-0.281	0.841	0.906
<i>KIF7</i>	21	1.000	-2.206	0.149	0.522	1.000	-2.135	0.170	0.793	0.678	0.818	0.912	1.000*	-1.427	0.099	0.812	1.000*	-1.424	0.110	0.761	1.690	0.316	0.879
<i>MTOR</i>	21	1.000	-0.007	0.991	0.991	0.833	0.342	0.544	0.891	-12.577	0.007	0.049	1.000*	0.274	0.399	0.916	1.000*	0.316	0.349	0.800	-2.709	0.425	0.879
<i>OFD1</i>	17	0.981	1.558	0.704	0.991	0.958	1.614	0.700	0.891	-3.545	0.492	0.861	1.000*	-0.335	0.851	0.916	1.000*	-0.505	0.781	0.800	1.580	0.504	0.879
<i>PIK3CA</i>	19	1.000	-0.039	0.829	0.991	0.863	0.217	0.278	0.891	-3.664	0.003	0.042	1.000*	0.024	0.817	0.916	1.000*	0.050	0.669	0.800	-0.617	0.561	0.879
<i>RIN2</i>	21	1.000	0.611	0.706	0.991	1.000	0.528	0.723	0.891	-3.899	0.089	0.312	1.000*	0.245	0.790	0.916	1.000*	0.240	0.796	0.800	-1.087	0.462	0.879
<i>SPRED1</i>	21	1.000	0.529	0.664	0.991	1.000	0.495	0.726	0.891	-0.649	0.783	0.912	1.000*	-0.469	0.506	0.916	1.000*	-0.311	0.699	0.800	0.959	0.479	0.879
<i>STRADA</i>	21	1.000	-1.283	0.138	0.522	1.000	-0.900	0.377	0.891	-0.298	0.899	0.912	1.000*	-0.575	0.259	0.916	1.000*	-0.835	0.163	0.761	1.744	0.223	0.879
<i>TBC1D7</i>	21	1.000	3.462	0.011	0.119	1.000	3.041	0.064	0.448	-4.310	0.065	0.303	1.000*	1.414	0.116	0.812	1.000*	0.627	0.546	0.800	-2.839	0.049	0.686

Supplementary Table S2. Root-to-tip dN/dS, dN, and dS values for candidate genes 1-8

Taxa	AKT1			AKT3			BRWD3			CCND2			EXT2			GPC3			HEPACAM			KIF7		
	dN/dS	dN	dS	dN/dS	dN	dS	dN/dS	dN	dS	dN/dS	dN	dS	dN/dS	dN	dS	dN/dS	dN	dS	dN/dS	dN	dS	dN/dS	dN	dS
<i>Aotus nancymaae</i>	NA	NA	NA	0.00	0.00	0.08	0.07	0.01	0.11	0.02	0.00	0.12	0.03	0.01	0.42	0.07	0.00	0.04	0.03	0.01	0.49	0.11	0.08	0.75
<i>Callithrix jacchus</i>	NA	NA	NA	0.00	0.00	0.09	NA	NA	NA	0.02	0.00	0.18	0.03	0.02	0.45	0.12	0.01	0.06	0.02	0.01	0.51	0.12	0.10	0.82
<i>Cebus capucinus</i>	0.01	0.00	0.35	0.00	0.00	0.08	0.09	0.01	0.11	0.02	0.00	0.14	0.04	0.02	0.46	0.19	0.01	0.06	0.01	0.01	0.45	0.13	0.09	0.75
<i>Cercocebus torquatus atys</i>	6.67	0.02	0.00	0.00	0.00	0.05	0.07	0.01	0.10	0.01	0.00	0.14	0.05	0.02	0.39	0.11	0.01	0.05	0.05	0.03	0.49	0.12	0.07	0.60
<i>Chlorocebus sabaeus</i>	0.01	0.00	0.41	0.00	0.00	0.05	0.08	0.01	0.10	0.01	0.00	0.14	0.08	0.03	0.39	0.10	0.01	0.05	0.04	0.02	0.52	0.12	0.07	0.58
<i>Colobus angolensis</i>	0.01	0.00	0.44	0.02	0.00	0.05	0.07	0.01	0.11	0.01	0.00	0.14	0.05	0.02	0.39	0.13	0.01	0.04	0.07	0.04	0.52	0.13	0.08	0.64
<i>Gorilla gorilla gorilla</i>	0.01	0.00	0.42	0.00	0.00	0.06	0.07	0.01	0.10	0.03	0.01	0.18	0.05	0.02	0.41	NA	NA	NA	0.03	0.01	0.40	0.13	0.07	0.54
<i>Homo sapiens</i>	0.01	0.00	0.42	0.00	0.00	0.06	0.07	0.01	0.11	0.04	0.01	0.16	0.06	0.02	0.40	0.20	0.01	0.04	0.06	0.02	0.39	0.10	0.05	0.55
<i>Macaca fascicularis</i>	0.01	0.00	0.39	0.00	0.00	0.06	0.07	0.01	0.11	0.03	0.00	0.15	0.06	0.02	0.39	0.13	0.01	0.05	0.04	0.02	0.53	0.11	0.07	0.61
<i>Macaca mulatta</i>	0.01	0.00	0.39	0.00	0.00	0.06	0.07	0.01	0.10	0.03	0.00	0.15	0.06	0.02	0.40	0.14	0.01	0.04	0.04	0.02	0.50	0.11	0.07	0.63
<i>Macaca nemestrina</i>	0.01	0.00	0.40	0.00	0.00	0.05	0.07	0.01	0.10	0.01	0.00	0.15	0.05	0.02	0.39	0.16	0.01	0.04	0.04	0.02	0.52	0.12	0.07	0.63
<i>Mandrillus leucophaeus</i>	NA	NA	NA	0.00	0.00	0.05	0.07	0.01	0.11	0.01	0.00	0.13	0.05	0.02	0.42	0.11	0.01	0.06	0.05	0.02	0.49	0.11	0.07	0.60
<i>Microcebus murinus</i>	0.00	0.00	0.53	0.00	0.00	0.06	0.06	0.01	0.10	0.02	0.00	0.19	0.04	0.02	0.48	0.11	0.01	0.13	0.09	0.04	0.38	0.09	0.06	0.69
<i>Nomascus leucogenys</i>	0.01	0.00	0.37	0.00	0.00	0.06	0.07	0.01	0.10	0.06	0.01	0.21	0.06	0.02	0.38	0.16	0.01	0.03	0.04	0.02	0.39	0.12	0.07	0.56
<i>Otolemur gamettii</i>	0.01	0.01	0.56	0.01	0.00	0.12	0.08	0.01	0.13	0.01	0.00	0.29	0.03	0.02	0.60	NA	NA	NA	NA	NA	NA	0.12	0.12	1.00
<i>Pan paniscus</i>	0.01	0.00	0.41	0.00	0.00	0.06	0.07	0.01	0.10	0.04	0.01	0.16	0.06	0.02	0.38	0.16	0.01	0.04	0.18	0.08	0.44	0.11	0.06	0.54
<i>Pan troglodytes troglodytes</i>	0.01	0.00	0.42	0.00	0.00	0.06	0.07	0.01	0.11	0.04	0.01	0.16	0.06	0.02	0.37	NA	NA	NA	0.05	0.02	0.35	0.10	0.05	0.53
<i>Papio anubis</i>	0.01	0.00	0.38	0.00	0.00	0.06	0.07	0.01	0.10	0.01	0.00	0.13	0.06	0.02	0.39	0.12	0.01	0.05	0.06	0.03	0.51	0.11	0.07	0.61
<i>Pongo abelii</i>	0.01	0.00	0.43	0.00	0.00	0.06	0.10	0.01	0.11	0.01	0.00	0.16	0.07	0.03	0.38	0.27	0.01	0.02	0.12	0.05	0.46	0.11	0.06	0.55
<i>Rhinopithecus bieti</i>	0.01	0.00	0.42	0.00	0.00	0.06	NA	NA	NA	0.02	0.00	0.15	0.06	0.02	0.39	NA	NA	NA	0.05	0.03	0.56	0.14	0.09	0.62
<i>Rhinopithecus roxellana</i>	0.01	0.00	0.42	0.00	0.00	0.06	0.08	0.01	0.11	0.02	0.00	0.16	0.06	0.02	0.38	0.11	0.01	0.05	0.06	0.03	0.55	0.13	0.08	0.62
<i>Saimiri boliviensis</i>	0.01	0.00	0.43	0.00	0.00	0.08	0.08	0.01	0.12	0.02	0.00	0.15	0.04	0.02	0.45	0.08	0.00	0.06	0.04	0.02	0.56	0.11	0.09	0.80
<i>Tarsius syrichta</i>	0.01	0.00	0.39	0.12	0.01	0.08	0.08	0.01	0.08	0.00	0.00	0.33	0.08	0.07	0.84	NA	NA	NA	0.06	0.02	0.39	0.13	0.07	0.54

Supplementary Table S3. Root-to-tip dN/dS, dN, and dS values for candidate genes 9-16

Taxa	MTOR			OFD1			PIK3CA			PTEN			RIN2			SPRED1			STRADA			TBC1D7		
	dN/dS	dN	dS	dN/dS	dN	dS	dN/dS	dN	dS	dN/dS	dN	dS	dN/dS	dN	dS	dN/dS	dN	dS	dN/dS	dN	dS	dN/dS	dN	dS
<i>Aotus nancymaae</i>	0.01	0.00	0.39	0.72	0.07	0.10	0.01	0.00	0.30	0.23	0.04	0.17	0.10	0.03	0.30	0.13	0.02	0.16	0.05	0.02	0.45	0.13	0.04	0.30
<i>Callithrix jacchus</i>	0.01	0.00	0.41	0.64	0.07	0.11	0.00	0.00	0.25	0.00	0.00	0.17	0.09	0.03	0.33	0.11	0.02	0.22	0.06	0.03	0.54	0.21	0.07	0.32
<i>Cebus capucinus</i>	0.02	0.01	0.39	0.63	0.07	0.11	0.01	0.00	0.24	0.00	0.00	0.16	0.12	0.04	0.31	0.13	0.02	0.18	0.05	0.02	0.47	0.16	0.05	0.31
<i>Cercocebus torquatus atys</i>	0.01	0.00	0.38	0.60	0.06	0.10	0.11	0.02	0.19	0.00	0.00	0.12	0.09	0.02	0.26	0.11	0.02	0.18	0.06	0.03	0.57	0.19	0.06	0.33
<i>Chlorocebus sabaeus</i>	0.01	0.00	0.39	0.57	0.06	0.11	0.02	0.00	0.15	0.00	0.00	0.11	0.09	0.02	0.27	0.12	0.02	0.17	0.06	0.03	0.58	0.20	0.06	0.32
<i>Colobus angolensis</i>	0.01	0.00	0.39	0.66	0.06	0.10	0.01	0.00	0.16	0.00	0.00	0.15	0.10	0.03	0.26	0.14	0.02	0.16	0.06	0.03	0.56	0.23	0.07	0.31
<i>Gorilla gorilla gorilla</i>	0.00	0.00	0.37	NA	NA	NA	0.02	0.00	0.14	0.00	0.00	0.10	0.10	0.03	0.27	0.14	0.02	0.14	0.06	0.03	0.48	0.24	0.07	0.28
<i>Homo sapiens</i>	0.01	0.00	0.36	0.67	0.06	0.09	0.02	0.00	0.13	0.00	0.00	0.10	0.10	0.03	0.26	0.14	0.02	0.14	0.05	0.02	0.48	0.25	0.07	0.27
<i>Macaca fascicularis</i>	0.01	0.00	0.39	0.61	0.06	0.10	0.02	0.00	0.15	0.00	0.00	0.12	0.11	0.03	0.26	0.13	0.02	0.16	0.06	0.03	0.58	0.22	0.07	0.31
<i>Macaca mulatta</i>	0.01	0.00	0.40	0.60	0.06	0.10	NA	NA	NA	0.00	0.00	0.11	0.11	0.03	0.26	0.15	0.02	0.15	0.06	0.03	0.58	0.21	0.07	0.32
<i>Macaca nemestrina</i>	0.01	0.00	0.39	0.66	0.08	0.12	0.02	0.00	0.15	0.00	0.00	0.11	0.10	0.03	0.26	0.12	0.02	0.17	0.06	0.03	0.58	0.22	0.07	0.31
<i>Mandrillus leucophaeus</i>	0.01	0.00	0.39	0.60	0.06	0.10	0.02	0.00	0.14	0.00	0.00	0.12	0.09	0.02	0.26	0.12	0.02	0.17	0.07	0.04	0.57	0.21	0.06	0.31
<i>Microcebus murinus</i>	0.01	0.01	0.42	0.66	0.07	0.11	NA	NA	NA	0.04	0.00	0.10	0.16	0.07	0.45	0.15	0.03	0.18	0.14	0.05	0.36	0.07	0.02	0.37
<i>Nomascus leucogenys</i>	0.01	0.00	0.39	0.67	0.06	0.08	0.02	0.00	0.15	0.00	0.00	0.09	0.09	0.03	0.28	0.13	0.02	0.18	0.08	0.03	0.45	0.24	0.07	0.28
<i>Otlemur gamettii</i>	0.01	0.01	0.49	NA	NA	NA	0.01	0.00	0.29	0.05	0.01	0.16	0.13	0.08	0.61	0.16	0.03	0.17	0.05	0.03	0.52	0.13	0.04	0.31
<i>Pan paniscus</i>	0.01	0.00	0.36	0.66	0.06	0.09	0.05	0.01	0.13	0.00	0.00	0.11	0.09	0.02	0.27	0.16	0.02	0.14	0.06	0.03	0.46	0.22	0.07	0.31
<i>Pan troglodytes troglodytes</i>	0.01	0.00	0.36	NA	NA	NA	0.02	0.00	0.13	0.00	0.00	0.10	0.09	0.02	0.26	0.14	0.02	0.14	0.06	0.03	0.46	0.22	0.07	0.32
<i>Papio anubis</i>	0.01	0.00	0.39	0.60	0.06	0.10	NA	NA	NA	0.00	0.00	0.11	0.10	0.03	0.26	0.13	0.02	0.16	0.07	0.04	0.57	0.18	0.06	0.36
<i>Pongo abelii</i>	0.01	0.00	0.39	0.66	0.05	0.08	0.03	0.00	0.14	0.13	0.01	0.11	0.10	0.03	0.28	0.18	0.03	0.16	0.09	0.04	0.44	0.21	0.06	0.28
<i>Rhinopithecus bieti</i>	0.01	0.00	0.39	NA	NA	NA	0.12	0.02	0.16	0.00	0.00	0.14	0.08	0.02	0.27	0.13	0.02	0.15	0.08	0.04	0.55	0.20	0.06	0.30
<i>Rhinopithecus roxellana</i>	0.01	0.00	0.39	0.67	0.06	0.09	0.03	0.00	0.14	0.00	0.00	0.14	0.09	0.02	0.27	0.13	0.02	0.15	0.06	0.03	0.52	0.20	0.06	0.30
<i>Saimiri boliviensis</i>	0.01	0.00	0.40	0.69	0.07	0.10	0.01	0.00	0.29	0.00	0.00	0.14	0.14	0.04	0.30	0.09	0.02	0.20	0.06	0.03	0.50	0.14	0.04	0.31
<i>Tarsius syrichta</i>	0.01	0.00	0.47	0.56	0.06	0.10	0.00	0.00	0.25	0.00	0.00	0.16	0.09	0.06	0.67	0.12	0.01	0.12	0.19	0.28	1.45	0.10	0.03	0.33

Supplementary Table S4. Accession numbers for candidate genes 1-8

Taxa	AKT1		AKT3		BRWD3		CCND2		EXT2		GPC3		HEPACAM		KIF7	
	Known RefSeq	Model RefSeq	Known RefSeq	Model RefSeq	Known RefSeq	Model RefSeq	Known RefSeq	Model RefSeq	Known RefSeq	Model RefSeq	Known RefSeq	Model RefSeq	Known RefSeq	Model RefSeq	Known RefSeq	Model RefSeq
<i>Aotus nancymaae</i>	NA	NA	NW_012189090.1			XM_012455736.1		XM_012455904.2		XM_012452407.1		XM_012474320.1		XM_012470205.1	NW_018503064.1	XM_021674356.1
<i>Callithrix jacchus</i>	NA	NA	NC_013914.1		NA	NA		XM_009003440.2		XM_002755201.4		XM_008989909.2		XM_009007046.2	NC_013901.1	XM_017973300.1
<i>Cebus capucinus</i>		XM_017505398.1		XM_017531947.1		XM_017519568.1		XM_017546077.1		XM_017529398.1		XM_017511970.1		XM_017523932.1	NW_016107334.1	XM_017517518.1
<i>Cercopithecus torquatus atys</i>		XM_012084168.1		XM_012036296.1		XM_012077287.1		XM_012054215.1		XM_012062330.1		XM_012061024.1		XM_012053250.1		XM_012074364.1
<i>Chlorocebus sabaues</i>		XM_007987997.1		XM_007989955.1		XM_007992160.1		XM_007997271.1		XM_008000918.1		XM_007992737.1		XM_008021374.1		XM_007990356.1
<i>Colobus angolensis</i>		XM_011951392.1		XM_011955702.1		XM_011944125.1		XM_011931071.1	NW_012119710.1	XM_011963272.1		XM_011930705.1		XM_011934728.1		XM_011948350.1
<i>Gonilla gonilla gonilla</i>		XM_019009506.1		XM_004028679.2		XM_019019638.1		XM_004052524.2		XM_004050977.2		NA	NA	XM_004052354.2		XM_019010423.1
<i>Homo sapiens</i>	NM_001014432.1		NM_005465.4		NM_153252.4		NM_001759.3		NM_207122.1		NM_001164619.2		NM_152722.4		NM_198525.2	
<i>Macaca fascicularis</i>		XM_005562350.2		XM_005539655.2		XM_015443968.1		XM_005569850.1		XM_015434882.1		XM_005594608.2		XM_005580044.2		XM_005560478.2
<i>Macaca mulatta</i>	NM_001261625.1		NM_001266640.1			XM_015127729.2		XM_015150849.2		XM_015114422.1		XM_015128213.2		XM_015116033.1		XM_001094468.3
<i>Macaca nemestrina</i>		XM_011755020.1		XM_011729486.1		XM_024787598.1		XM_011745486.2		XM_011724183.1		XM_011741015.2		XM_011732050.1		XM_011752271.1
<i>Mandrillus leucophaeus</i>	NA	NA		XM_011981158.1		XM_011970792.1		XM_011996293.1		XM_012001352.1		XM_012001312.1		XM_012001705.1		XM_011986344.1
<i>Microcebus murinus</i>		XM_012746390.2		XM_012751177.2		XM_012790329.2		XM_012783145.2		XM_012790441.1		XM_012764774.1		XM_012752551.2		XM_012763339.2
<i>Nomascus leucogenys</i>	NM_001165894.1			XM_012506588.1		XM_003269007.3		XM_012502279.1		XM_003254461.2		XM_003272634.4		XM_003253336.2		XM_012507116.1
<i>Otolemur gamettii</i>		XM_012498084.1		XM_003798812.2		XM_003803556.3		XM_003796426.3		XM_003781248.1		NA	NA	NA	NW_003852424.1	XM_003788669.2
<i>Pan paniscus</i>	NW_003852678.1			XM_003808002.3		XM_008978138.1		XM_003820341.3		XM_003808219.2		XM_003814501.2		XM_008973532.1		XM_008973901.2
<i>Pan troglodytes troglodytes</i>		XM_003806999.1		XM_016934876.1		XM_016943269.2		XM_001156857.5		XM_508383.5		NA	NA	XM_009424434.2		XM_016927405.1
<i>Papio anubis</i>		XM_024348956.1		XM_017958446.1		XM_017954111.2		XM_003905821.2		XM_009186257.2		XM_017954390.2		XM_003910894.3		XM_009210913.2
<i>Pongo abelii</i>		XM_009212375.2		XM_024234045.1		NC_012614.1		XM_002822783.3		XM_002821850.2		XM_024240565.1		XM_002822651.3		XM_009250144.1
<i>Rhinopithecus bieti</i>	NC_012605.1			XM_017870381.1		NA	NA	XM_017883284.1		XM_017858114.1		NA	NA	XM_017853859.1		XM_017861233.1
<i>Rhinopithecus roxellana</i>		XM_010376937.1		XM_010353265.1		NW_010800240.1		XM_010359145.1		XM_010378049.1		XM_030933937.1		XM_010384619.1		XM_010378635.1
<i>Saimiri boliviensis</i>		XM_003933348.2		XM_003935330.2		XM_003936828.2		XM_003942188.1		XM_003920016.2		XM_003931143.2		XM_010334671.1		XM_003921756.2
<i>Tarsius syrichta</i>	NW_007245946.1		NW_007245650.1	XM_008052375.2		XM_008069344.2		XM_008048699.1	NW_007257306.1	XM_008058453.2		NA	NA	XM_008057832.1		XM_021718842.1

Supplementary Table S5. Accession numbers for candidate genes 9-16

Taxa	MTOR		OFD1		PIK3CA		PTEN		RIN2		SPRED1		STRADA		TBC1D7	
	Known RefSeq	Model RefSeq	Known RefSeq	Model RefSeq	Known RefSeq	Model RefSeq	Known RefSeq	Model RefSeq	Known RefSeq	Model RefSeq	Known RefSeq	Model RefSeq	Known RefSeq	Model RefSeq	Known RefSeq	Model RefSeq
<i>Aotus nancymaae</i>		XM_012473670.1		XM_012434967.2	NW_012184291.1	XM_012472256.2		XM_012467566.1		XM_021673566.1		XM_012465033.1		XM_012443842.2		XM_012476566.1
<i>Callithrix jacchus</i>		XM_009000401.2		XM_017968373.1	NC_013910.1	XM_002758097.3		XM_017979117.1		XM_008995820.2		XM_002753561.4		XM_002748137.4		XM_008993951.2
<i>Cebus capucinus</i>	NW_016107330.1	XM_017503042.1		XM_017508823.1		XM_017506295.1		XM_017536375.1		XM_017512654.1		XM_017530903.1		XM_017549200.1		XM_017521503.1
<i>Cercocebus torquatus atys</i>		XM_012049371.1		XM_012035865.1	NW_010022159.1	XM_012086241.1		XM_012063164.1	NW_012007257.1			XM_012034725.1		XM_012070595.1		XM_012031317.1
<i>Chlorocebus sabaeus</i>		XM_007980575.1		XM_007991057.1	NC_023656.1	XM_007972038.1		XM_007963471.1		XM_007961294.1		XM_008017098.1		XM_008012140.1		XM_007973671.1
<i>Colobus angolensis</i>		XM_011935809.1		XM_011957843.1	NW_012118155.1	XM_011958660.1		XM_011938741.1		XM_011963061.1		XM_011932653.1		XM_011947949.1		XM_011962705.1
<i>Gorilla gorilla gorilla</i>	NC_018424.2	XM_019011017.1	NA	NA		XM_004038036.2		XM_019035119.1	NC_018444.2			XM_019011240.1		XM_004041159.2		XM_004043285.2
<i>Homo sapiens</i>	NM_004958.3		NM_001330210.1		NM_006218.3		NM_000314.6		NM_001242581.1		NM_152594.2		NM_001003786.2		NM_001143965.3	
<i>Macaca fascicularis</i>		XM_015442686.1		XM_005592994.2	NC_022273.1	XM_005546432.2		XM_005565882.2		XM_005568234.2		XM_005559135.2		XM_005584655.2		XM_005554023.2
<i>Macaca mulatta</i>		XM_015111100.1		XM_001098347.4		NA	NM_001260965.1		XM_015149571.1		NM_001204360.1		XM_00116286.3		XM_015135572.1	
<i>Macaca nemestrina</i>	NW_012015133.1			XM_024791672.1	NW_012011233.1	XM_011755149.1		XM_011740112.1		XM_011749872.1		XM_011759809.1		XM_011743578.1		XM_011742539.1
<i>Mandrillus leucophaeus</i>		XM_011996603.1		XM_011994830.1	NW_012102155.1	XM_011980373.1		XM_011990298.1		XM_011979525.1		XM_011989328.1		XM_011997060.1		XM_011989672.1
<i>Microcebus murinus</i>		XM_012791400.2		XM_012784803.2		NA		XM_012762897.1	NC_033677.1			XM_012766374.2		XM_012747285.2		XM_012753510.2
<i>Nomascus leucogenys</i>	NC_019839.1			XM_030806885.1	NC_019826.1	XM_012510799.1		XM_003255173.3		XM_012512259.1		XM_003272817.2		XM_012497582.1		XM_003263521.3
<i>Otolemur gamettii</i>		XM_003793268.2	NA	NA	NW_003852473.1	XM_003794281.2		XM_003783677.2		XM_003798462.2		XM_003791698.2		XM_003786204.1		XM_003788311.2
<i>Pan paniscus</i>		XM_003822083.3		XM_003805694.3	NC_027871.1	XM_014344454.1	NM_001301760.1		XM_008962962.2		XM_008969805.1		XM_003811345.2		XM_003823152.2	
<i>Pan troglodytes troglodytes</i>		XM_016953950.1	NA	NA	NC_006490.4	XM_016942318.1		XM_016918822.1		XM_009436892.2		XM_001138171.4		XM_016930624.1		XM_001169035.5
<i>Papio anubis</i>		XM_017960413.1		XM_003917416.4		NA		XM_009214930.1		XM_017945051.1		XM_003900749.3		XM_009190986.2		XM_003897068.2
<i>Pongo abelii</i>	NC_012591.1			XM_024240796.1	NC_012594.1	XM_009239559.1	NM_001131483.1		XM_002830003.3		XM_003780630.1		XM_003780630.1	NM_001132022.1		XM_009241431.1
<i>Rhinopithecus bieti</i>	NW_016843223.1	XM_017887986.1	NA	NA	NW_016803343.1	XM_017877282.1		XM_017868858.1		XM_017883330.1		XM_017868162.1		XM_017882900.1		XM_017891130.1
<i>Rhinopithecus roxellana</i>		XM_010353522.1		XM_010354059.2	NW_010789103.1	XM_010373943.1		XM_010379624.1	NW_010829246.1		XM_010358441.1		XM_010380047.1		XM_010357133.1	
<i>Saimiri boliviensis</i>	NW_003943684.1			XM_003920320.2	NW_003943624.1	XM_003926921.2		XM_003922436.2		XM_010343724.1		XM_003935735.2		XM_003942437.2		XM_010338117.1
<i>Tarsius syrichta</i>	NW_007256301.1	XM_008069778.1		XM_008052678.1	NW_007251201.1	XM_008063853.1		XM_008071752.1	NW_007231443.1		XM_008064441.1		NW_007070541.1	XM_021707820.1		XM_008056827.1

Supplementary Table S6. Brain and body mass for 23 primate species

Taxa	Brain Mass (g)	Body Mass (g)	Source	Notes
<i>Aotus nancymaae</i>	16.78	869.98	DeCasien et al. 2017 [70]	Brain/body size data for <i>A. lemurinus</i>
<i>Callithrix jacchus</i>	7.64	272.71	DeCasien et al. 2017 [70]	
<i>Cebus capucinus</i>	73.79	2,798.11	DeCasien et al. 2017 [70]	
<i>Cercocebus torquatus atys</i>	99.81	7,770.62	DeCasien et al. 2017 [70]	
<i>Chlorocebus sabaesus</i>	67.25	4,312.00	Isler et al. 2008 [71]	Endocranial volumes multiplied by 1.036
<i>Colobus angolensis</i>	71.56	8,807.66	DeCasien et al. 2017 [70]	
<i>Gorilla gorilla gorilla</i>	507.25	121,327.00	DeCasien et al. 2017 [70]	
<i>Homo sapiens</i>	1,330.00	65,000.00	Montgomery et al. 2010 [3]	
<i>Macaca fascicularis</i>	66.53	4,644.11	DeCasien et al. 2017 [70]	
<i>Macaca mulatta</i>	88.94	6,471.73	DeCasien et al. 2017 [70]	
<i>Macaca nemestrina</i>	109.87	7,244.59	DeCasien et al. 2017 [70]	
<i>Mandrillus leucophaeus</i>	185.96	16,251.65	DeCasien et al. 2017 [70]	
<i>Microcebus murinus</i>	1.72	63.93	DeCasien et al. 2017 [70]	
<i>Nomascus leucogenys</i>	116.08	7,320.00	Montgomery 2011 [72]	
<i>Otolemur garnettii</i>	11.24	1,055.59	DeCasien et al. 2017 [70]	
<i>Pan paniscus</i>	346.24	37,522.48	DeCasien et al. 2017 [70]	
<i>Pan troglodytes troglodytes</i>	376.13	48,328.00	DeCasien et al. 2017 [70]	
<i>Papio anubis</i>	171.80	17,209.52	DeCasien et al. 2017 [70]	
<i>Pongo abelii</i>	409.52	48,223.06	DeCasien et al. 2017 [70]	
<i>Rhinopithecus bieti</i>	114.53	11,000.54	Montgomery 2011 [72]	
<i>Rhinopithecus roxellana</i>	122.00	14,750.00	Isler et al. 2008 [71]	Endocranial volumes multiplied by 1.036
<i>Saimiri boliviensis</i>	25.74	707.23	DeCasien et al. 2017 [70]	
<i>Tarsius syrichta</i>	3.48	107.54	DeCasien et al. 2017 [70]	