Animal Biology

Evolution of vertebrate brain size is associated with sexual traits

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Supplementary material

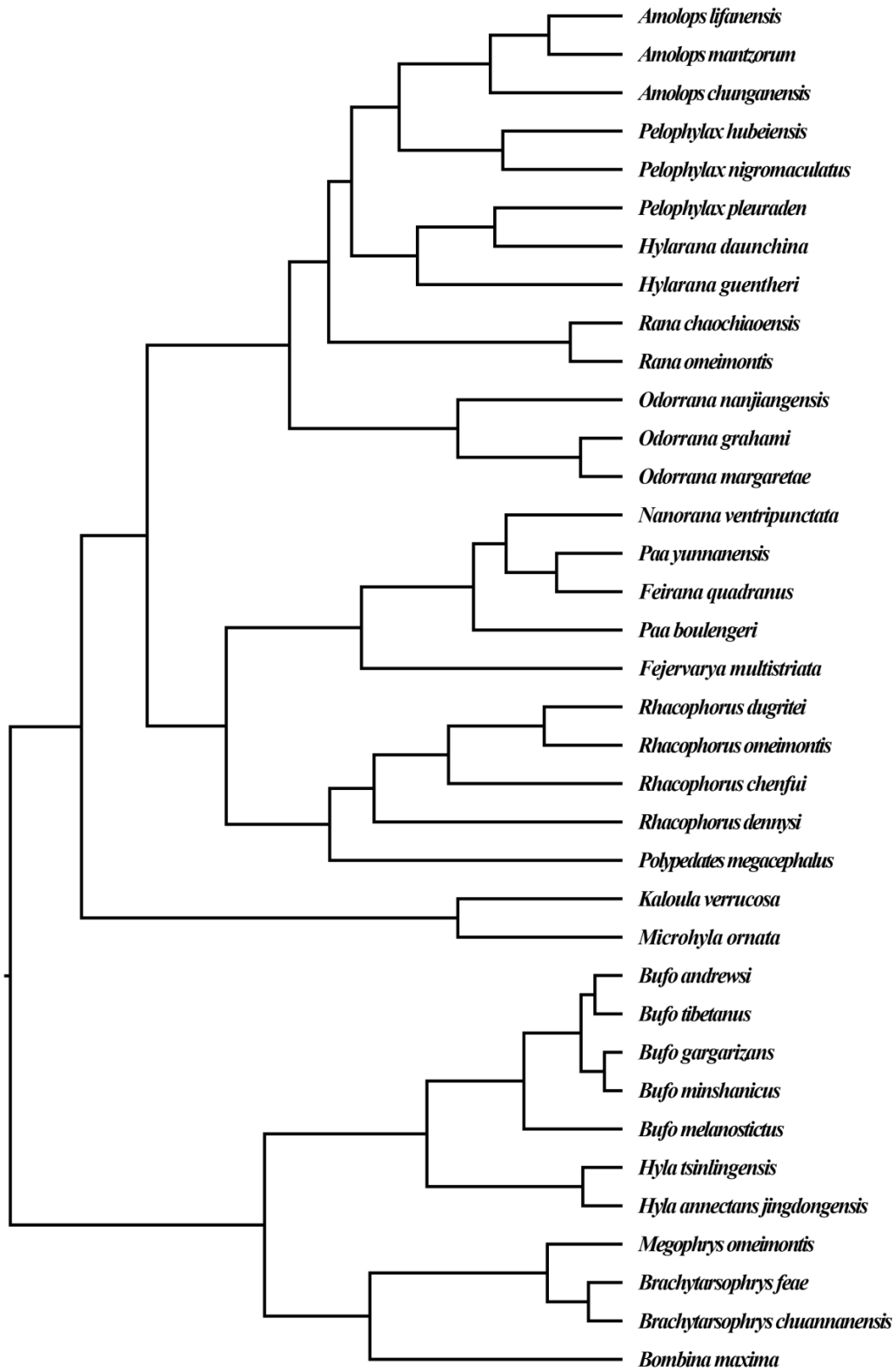

Figure S1. Phylogeny of the anurans. Reconstruction of the molecular phylogeny of the anurans based on Liao et al. (2018).

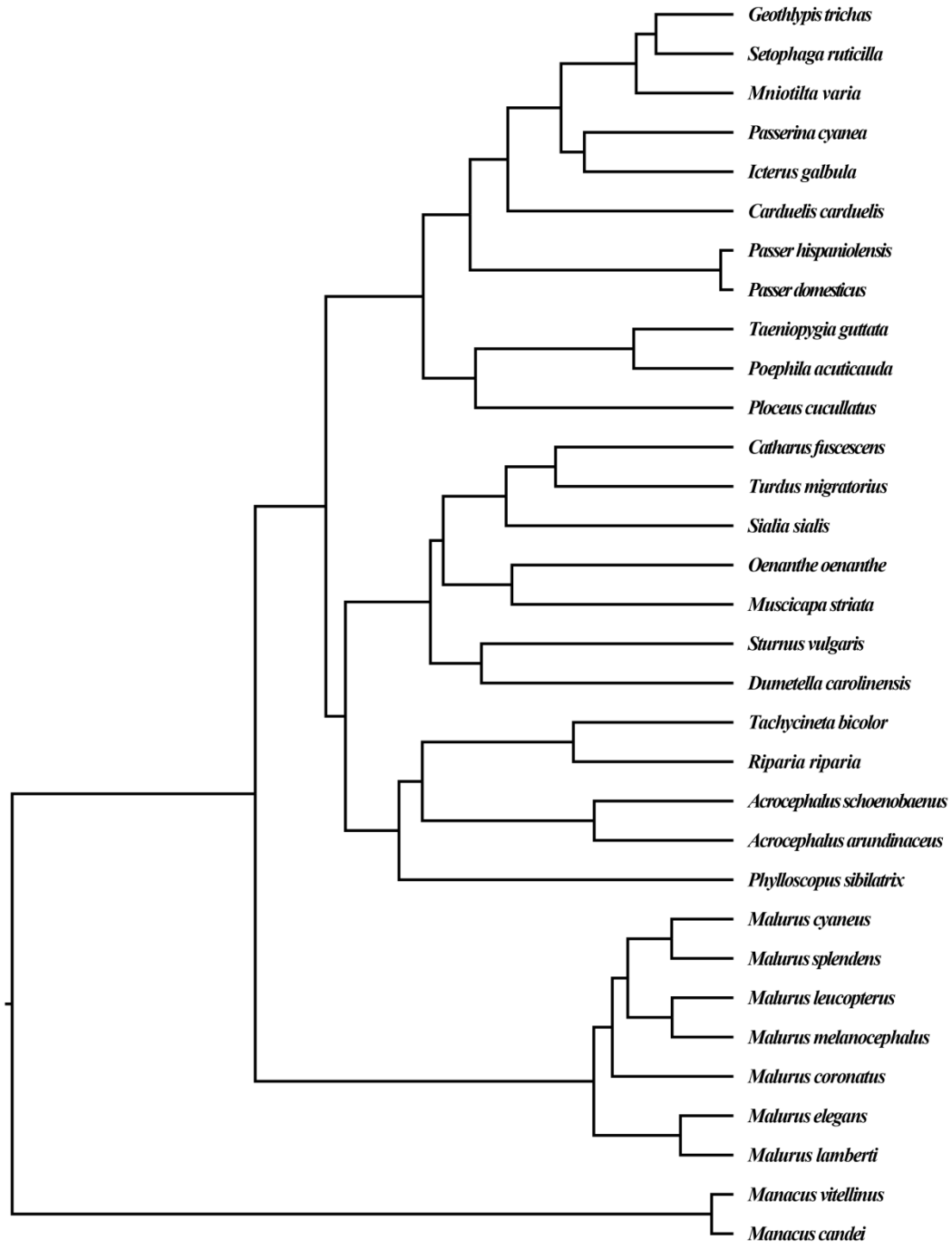

Figure S2. Phylogenetic reconstruction for the 32 birds used in this study.

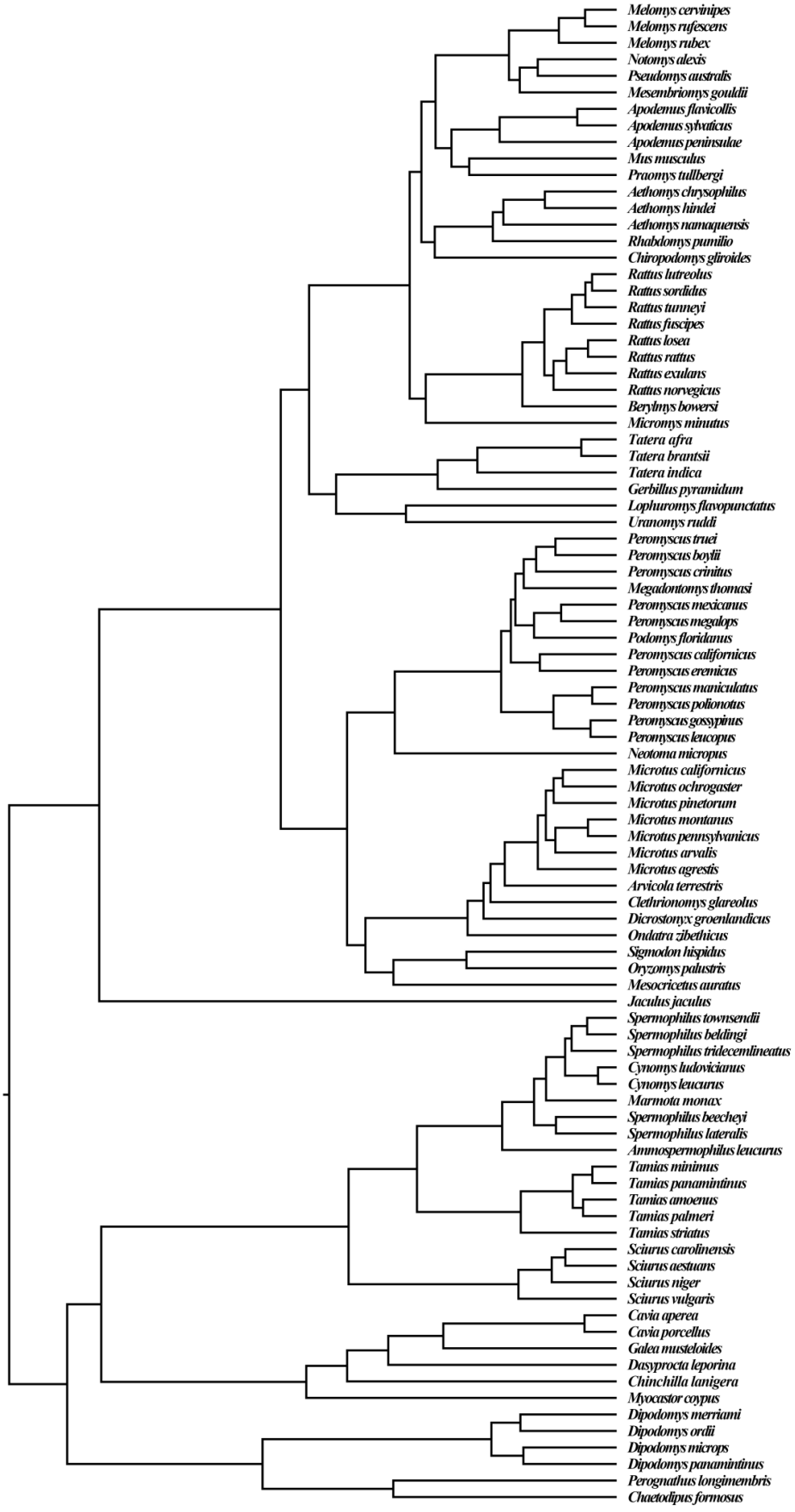

Figure S3. Phylogenetic reconstruction for the 91 rodentia used in this study.

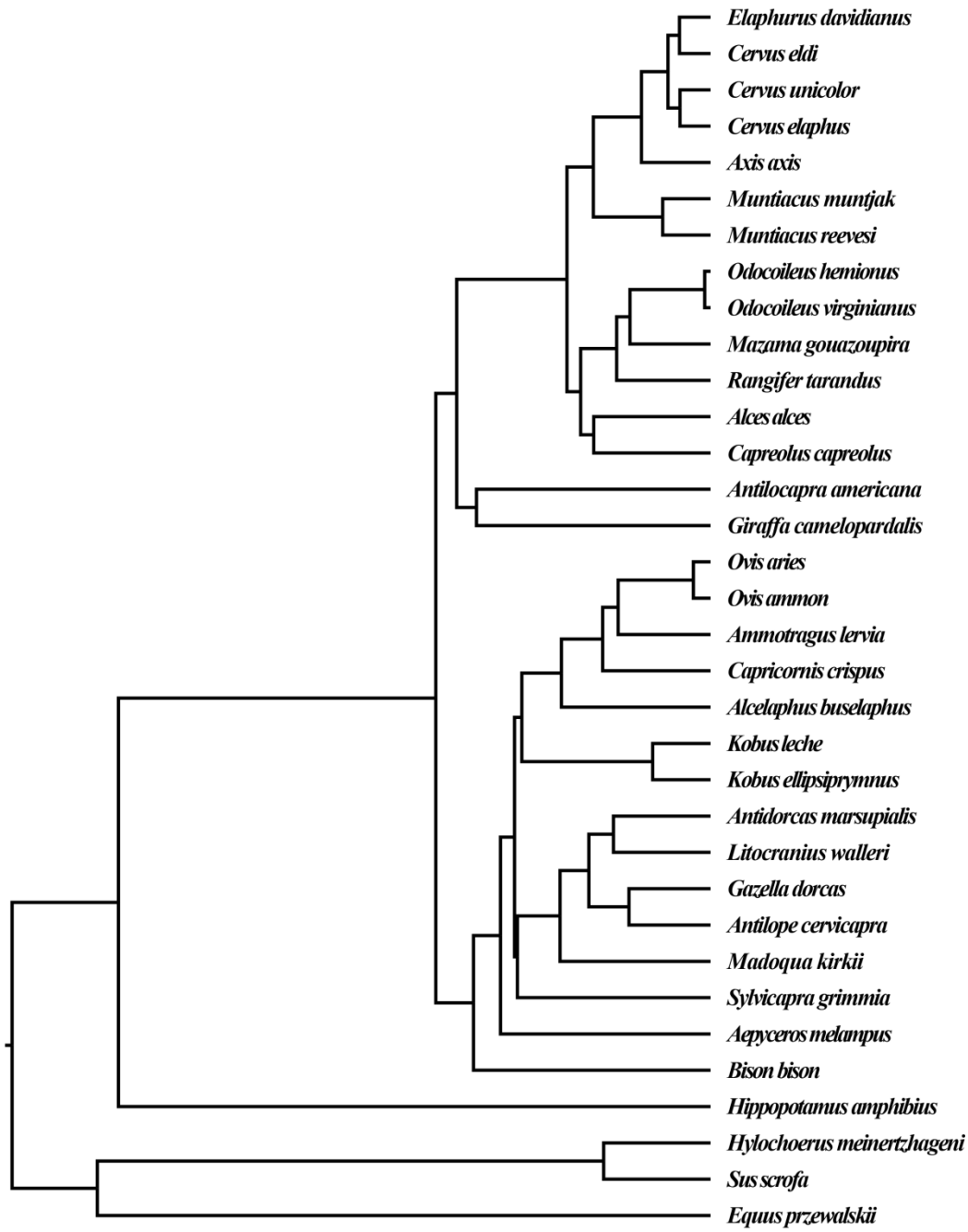

Figure S4. Phylogenetic reconstruction for the 34 ungulates used in this study.

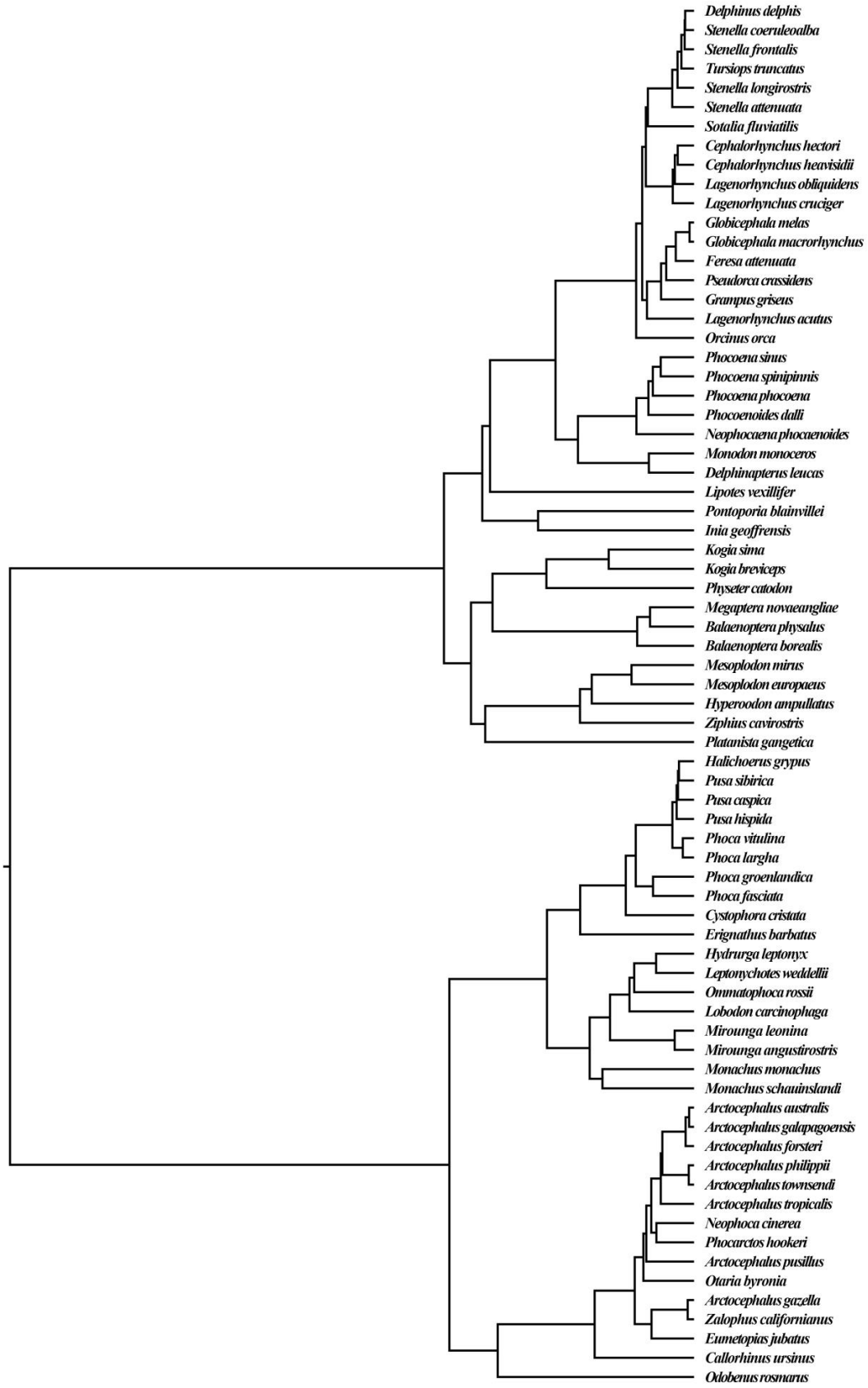

Figure S5. Phylogenetic reconstruction for the 72 cetaceans used in this study .

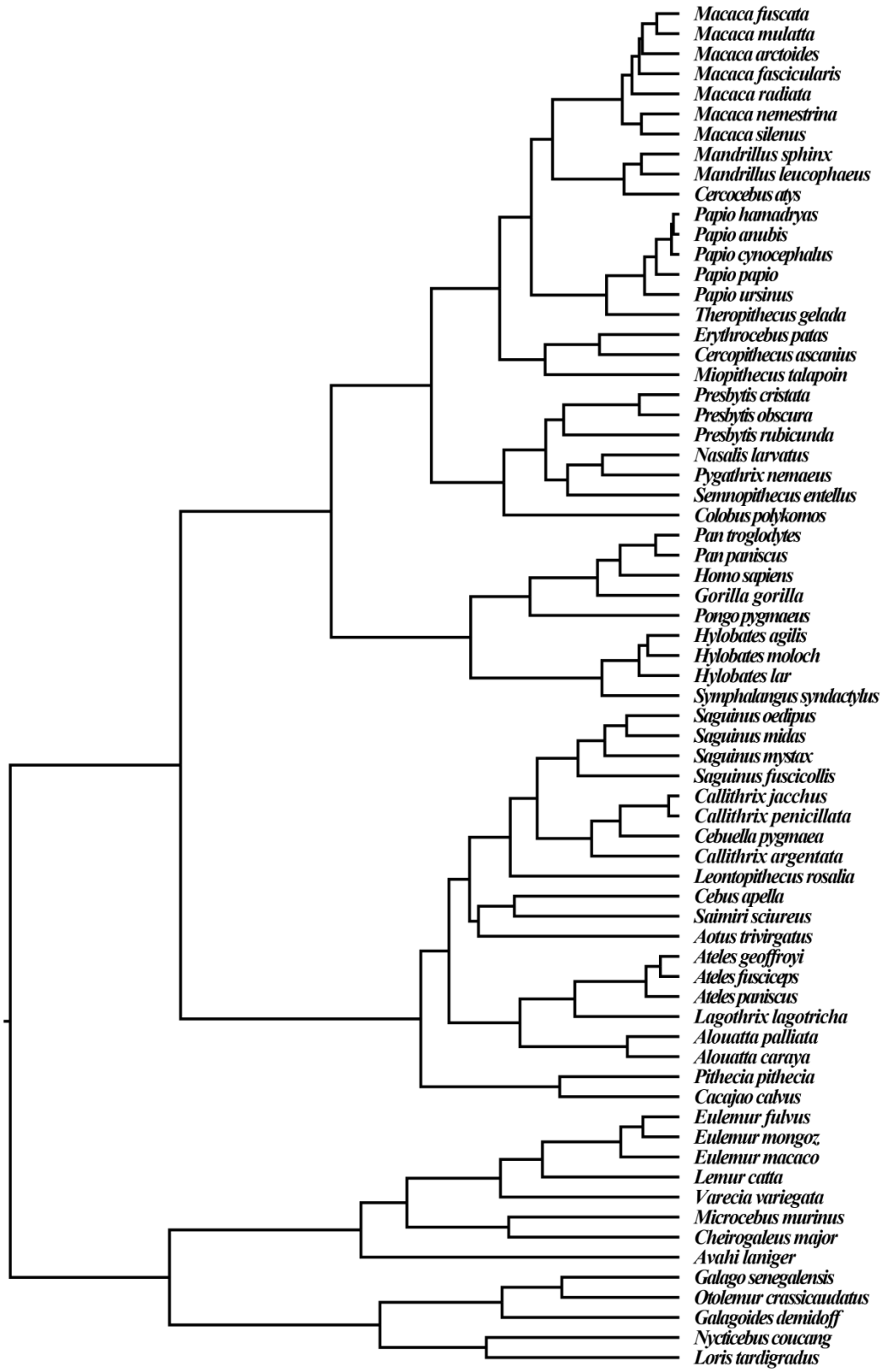

Figure S6. Phylogenetic reconstruction for the 68 primates used in this study.

Table S1.

Genbank accession numbers of the 32 braids species used in this study.

Species	12S	CYTB	CO1	ND2	RAG1	TGFB2
Acrocephalus arundinaceus	AB492871.1	AJ004784.1	FR847226.1	GQ242092.1	KJ453461.1	
Acrocephalus schoenobaenus		AJ004239.1	GU571218.1	KJ453227.1	KJ453487.1	
Carduelis carduelis		AY495383.1	KM078790.1	KM078790.1	KM112978.1	KU719087.1
Catharus fuscescens		AY049495.1	AY666300.1	AY049519.1		KC693126.1
Dumetella carolinensis	AF140990.1		EF484216.1	JN799661.1	AY319981.1	EF484115.1
Geothlypis trichas	AF447233.1	EF529953.1	HM033479.1	EF529842.1	KC007802.1	GU932474.1
Icterus galbula	AF447237.1	AF099290.1	DQ434611.1	HQ384247.1		JX403342.1
Malurus coronatus			JF919508.1	EU144240.1		JN598099.1
Malurus cyaneus	GU393952.1	AF197845.1	AF197846.1	EU144239.1	GU825803.1	JN598079.1
Malurus elegans	GU393955.1		JF919511.1	GU825876.1	GU825806.1	JN598081.1
Malurus lamberti	AY488256.1	AY488402.1	JF919514.1	AY488326.1	GU825805.1	FJ422101.1
Malurus leucopterus		EU341380.1	JF919516.1	GU825875.1	EU341455.1	FJ422117.1
Malurus melanocephalus	NC_024873.1	NC_024873.1	NC_024873.1	NC_024873.1	AY057001.1	FJ422094.1
Malurus splendens	AY488257.1	AY488403.1	JF919519.1	JF967680.1	GU825804.1	FJ422087.1
Manacus candei		EU442331.1	JQ175324.1	KF228540.1		EU522603.1
Manacus vitellinus		EF202819.1	JQ175327.1	KF228542.1		EU522617.1
Mniotilta varia		AF383006.1	AF383082.1	AF383122.1		GU932426.1
Muscicapa striata	AF484936.1	EF081348.1	HQ168062.1	GU237117.1	FJ358149.1	KU719273.1
Oenanthe oenanthe	EU154491.1	GU055483.1	GU571510.1	GU358816.1		
Passer domesticus	KM078784.1	KM078784.1	KM078784.1	KM078784.1	EF568263.1	EU878634.1
Passer hispaniolensis		KY378764.1	HQ168058.1	KX370653.1		
Passerina cyanea	AF447246.1	AF447372.1	DQ434711.1	EF529885.1	KM225028.1	EU191822.1
Phylloscopus sibilatrix	AY635107.1	AY944178.1	GU571562.1	FJ173430.1		KU719217.1

Ploceus cucullatus		AF290141.1	HQ998437.1	AF290104.1	AY057022.1	EU737437.1
Poephila acuticauda		AY491526.1				
Riparia riparia		AF074578.1	FJ582635.1	EU156366.1		
Setophaga ruticilla		EU815694.1	DQ434741.1	AF383124.1	KC007796.1	EU815820.1
Sialia sialis	EU154496.1	HM633380.1	EU525498.1	AY752360.1	AY320001.1	
Sturnus vulgaris	NC_029360.1	NC_029360.1	NC_029360.1	NC_029360.1	AY057032.1	EF484109.1
Tachycineta bicolor	NC_020596.1	NC_020596.1	NC_020596.1	NC_020596.1		
Taeniopygia guttata	DQ422742.1	DQ422742.1	DQ422742.1	DQ422742.1		FJ408722.1
Turdus migratorius	NC_024872.1	NC_024872.1	NC_024872.1	NC_024872.1	KC789829.1	

Table S2.

Genbank accession numbers of the 91 rodentia species used in this study.

Species	12S	16S	CYTB	COI	ND2	ND4	GHR	IRBP
Aethomys chrysophilus	AF141276.2	AF141245.2	AJ604526.1				JQ694059.1	AY326075.1
Aethomys hindei			KU747156.1					KU723654.1
Aethomys namaquensis	AF141277.2	AF141246.1	KY754036.1				AY294914.1	AM408330.1
Ammospermophilus leucurus			KX278553.1				KX278679.1	
Apodemus flavicollis	AJ311164.1		AJ311151.1				AM910943.1	JX457628.1
Apodemus peninsulae	KP671850.1	KP671850.1	KP671850.1	KP671850.1	KP671850.1	KP671850.1		AB032857.1
Apodemus sylvaticus	AJ311131.1		AJ311148.1				KM397258.1	JX457654.1
Arvicola terrestris			AF159400.1	AY332681.1			KX455563.1	KX455509.1
Berylmys bowersi			AM408337.1	JN105104.1			AM910946.1	AM407896.1
Cavia aperea	AY765987.1		AY382791.1				AF433930.1	
Cavia porcellus	NC_000884.1	NC_000884.1	NC_000884.1	NC_000884.1	NC_000884.1	NC_000884.1	AF247665.1	AJ427248.1
Chaetodipus formosus	EF156786.1	EF156821.1	AY009245.2	EF156859.1	JQ411874.1			GQ480800.1
Chinchilla lanigera			AF122820.1				AF332036.1	AJ427246.1
Chiropodomys gliroides			KY753963.1	JF444993.1			KJ607289.1	KJ772368.1
Clethrionomys glareolus	AJ250356.1		DQ472348.1	AY332678.1			AM392384.1	JX457709.1
Cynomys leucurus	NC_026705.1	NC_026705.1	NC_026705.1	NC_026705.1	NC_026705.1	NC_026705.1		AY227584.1
Cynomys ludovicianus	NC_026706.1	NC_026706.1	NC_026706.1	NC_026706.1	NC_026706.1	NC_026706.1		
Dasyprocta leporina	KX381742.1		AF437814.1	HQ919680.1			FJ855207.1	
Dicrostonyx groenlandicus	NC_034313.1	NC_034313.1	NC_034313.1	NC_034313.1	NC_034313.1	NC_034313.1		
Dipodomys merriami	JN661641.1	EF156804.1	JN661644.1	EU107517.1			FM162074.1	AJ427233.1
Dipodomys microps	EF156767.1	DQ422887.2	DQ422914.1	EU107493.1				
Dipodomys panamintinus	EF156770.1	EF156807.1	AY926384.1	EU107504.1				
Dipodomys ordii	JN661637.1	EF156806.1	AF173501.1	EU107513.1			JN661669.1	JN661684.1

Galea musteloides	AF433911.1		KJ742648.1				AF433932.1	
Gerbillus pyramidum	AJ851245.1		LN606692.1					LN606667.1
Jaculus jaculus	NC_005314.1	NC_005314.1	NC_005314.1	NC_005314.1	NC_005314.1	NC_005314.1	AF332040.1	KM397140.1
Lophuromys flavopunctatus	U67294.1	AY828280.1	EU349754.1				AY294921.1	AY326091.1
Marmota monax	AY227529.1	AY227473.1	AF100719.1	JF456718.1			AM407917.1	AJ427237.1
Megadontomys thomasi			AB618711.1				EF989750.1	EF989850.1
Melomys cervinipes		KJ632042.1						KC953399.1
Melomys rubex		JN114304.1						
Melomys rufescens		JN114297.1	KY754033.1				EU349816.1	
Mesembriomys gouldii			KY754034.1				EU349817.1	
Mesocricetus auratus	EU660218.1	EU660218.1	EU660218.1	EU660218.1	EU660218.1	EU660218.1	AF540632.1	AB164047.1
Micromys minutus	NC_027932.1	NC_027932.1	NC_027932.1	NC_027932.1	NC_027932.1	NC_027932.1	EU349818.1	JX457657.1
Microtus agrestis			GQ352470.1	JF499313.1			AM910792.1	KX455514.1
Microtus arvalis			GU187386.1	JF499317.1			KP057335.1	JX457689.1
Microtus californicus			AF163891.1				KC953277.1	KC953401.1
Microtus montanus			AF119280.1			AF128946.1	KC953278.1	KC953402.1
Microtus ochrogaster	NC_027945.1	NC_027945.1	NC_027945.1	NC_027945.1	NC_027945.1	NC_027945.1	MF074897.1	KX455529.1
Microtus pennsylvanicus	JN393216.1		AF119279.1	JF456799.1			AF540633.1	AM919415.1
Microtus pinetorum			AF163904.1				MF074898.1	
Mus musculus	AP014941.1	AP014941.1	AP014941.1	AP014941.1	AP014941.1	AP014941.1		JX457617.1
Myocastor coypus	NC_035866.1	NC_035866.1	NC_035866.1	NC_035866.1	NC_035866.1	NC_035866.1		JN414814.1
Neotoma micropus	DQ179700.1	DQ179750.1	EU286808.1				MF074908.1	EF989854.1
Notomys alexis			AY176318.1					
Ondatra zibethicus	NC_036035.1	NC_036035.1	NC_036035.1	NC_036035.1	NC_036035.1	NC_036035.1	AY294925.1	KC953427.1
Oryzomys palustris	JF693864.1		EU074640.1				KC953304.1	KT950915.1
Perognathus longimembris	EF156792.1	EF156827.1	AY926408.1	EF156865.1				GQ480808.1

Peromyscus boylii			EF989971.1	JF446122.1			EF989771.1	EF989871.1
Peromyscus californicus			KY754099.1				EF989772.1	EF989873.1
Peromyscus crinitus	NC_035614.1	NC_035614.1	NC_035614.1	NC_035614.1	NC_035614.1	NC_035614.1	KC953310.1	KC953436.1
Peromyscus eremicus			KY754104.1	JF444974.1				
Peromyscus gossypinus			DQ385625.1				KT965000.1	JX910126.1
Peromyscus leucopus		JN181159.1	KX784166.1	JN181159.1	JN181159.1		AY294927.1	JF938886.1
Peromyscus maniculatus	JF693865.1		JF489123.1	JF457067.1			EF989783.1	AY326102.1
Peromyscus megalops	KY707305.1	KY707305.1	KY707305.1	KY707305.1	KY707305.1	KY707305.1	KT950908.1	JX910127.1
Peromyscus mexicanus			JX910118.1	JN312097.1			EF989794.1	EF989895.1
Peromyscus polionotus	NC_035571.1	NC_035571.1	NC_035571.1	NC_035571.1	NC_035571.1	NC_035571.1	JF938859.1	JF938885.1
Peromyscus truei			AF108703.1					AY277413.2
Podomys floridanus	NC_035595.1	NC_035595.1	NC_035595.1	NC_035595.1	NC_035595.1	NC_035595.1	KT950912.1	EF989879.1
Praomys tullbergi		JQ844106.1	JQ735887.1	JQ668023.1			DQ019072.1	DQ022413.1
Pseudomys australis			AM910936.1				DQ019073.1	
Rattus exulans	KY814720.1	KY814720.1	KY814720.1	KY814720.1	KY814720.1	KY814720.1	DQ019074.1	AY326105.1
Rattus fuscipes	NC_014867.1	NC_014867.1	NC_014867.1	NC_014867.1	NC_014867.1	NC_014867.1		
Rattus lutreolus	NC_014858.1	NC_014858.1	NC_014858.1	NC_014858.1	NC_014858.1	NC_014858.1		
Rattus sordidus	NC_014871.1	NC_014871.1	NC_014871.1	NC_014871.1	NC_014871.1	NC_014871.1		
Rattus tunneyi	NC_014861.1	NC_014861.1	NC_014861.1	NC_014861.1	NC_014861.1	NC_014861.1		
Rattus losea			JN850553.1	HM031896.1				
Rattus norvegicus	KM114607.1	KM114607.1	KM114607.1	KM114607.1	KM114607.1	KM114607.1	JF412704.1	AJ429134.1
Rattus rattus	FJ355927.1	FJ355927.1	FJ355927.1	FJ355927.1	FJ355927.1	FJ355927.1	AM910976.1	AB211044.1
Rhabdomys pumilio	AF141275.2	AF141244.1	KY754140.1	JQ003470.1			AY294913.1	AY326106.1
Sciurus aestuans	AJ012746.1		AJ389530.1				FM162078.1	FM162057.1
Sciurus carolinensis	JN393212.1		FJ200744.1	JF457099.1				HG962385.1
Sciurus niger	U59174.1	DQ334840.1	FJ200745.1	JF457111.1			AF332032.1	HG962404.1

Sciurus vulgaris	KU962990.1	KU962990.1	KU962990.1	KU962990.1	KU962990.1	KU962990.1		AY227620.1
Sigmodon hispidus	NC_035572.1	NC_035572.1	NC_035572.1	NC_035572.1	NC_035572.1	NC_035572.1	AF540641.1	EF989927.1
Spermophilus beldingi			AF157951.1				KX278661.1	
Spermophilus lateralis	NC_031210.1	NC_031210.1	NC_031210.1	NC_031210.1	NC_031210.1	NC_031210.1		
Spermophilus tridecemlineatus	NC_027278.1	NC_027278.1	NC_027278.1	NC_027278.1	NC_027278.1	NC_027278.1	JX047261.1	AF297278.1
Spermophilus beecheyi			KX278554.1				KX278680.1	
Spermophilus townsendii			KX278565.1				KX278663.1	
Tamias amoenus	KY070171.1	KY070171.1	KY070171.1	KY070171.1	KY070171.1	KY070171.1		
Tamias minimus		AF147686.1	AF147650.1	JQ601445.1				
Tamias palmeri		AF147688.1	AF147655.1					
Tamias panamintinus		AF147689.1	AF147656.1					
Tamias striatus	NC_032375.1	NC_032375.1	NC_032375.1	NC_032375.1	NC_032375.1	NC_032375.1	JF938863.1	AY227588.1
Tatera indica	AJ430553.1	AM409239.1	AJ430563.1	JN411128.1				
Tatera afra	AJ430552.1	AM409232.1	AJ430560.1					
Tatera brantsii		AM409237.1	AM409393.1					
Uranomys ruddi	X84388.1	Z83922.1	HM635858.1				DQ019051.1	

Table S3.

Genbank accession numbers of the 34 ungulates species used in this study.

Species	12S	16S	CYTB	COI	ND2	ND4	PRKCI	SPTBN1
Aepyceros melampus	JN632592.1	JN632592.1	JN632592.1	JN632592.1	JN632592.1	JN632592.1	AF165781.1	AF165782.1
Alcelaphus buselaphus	JN632594.1	JN632594.1	JN632594.1	JN632594.1	JN632594.1	JN632594.1	AF210181.1	AF210203.1
Alces alces	JN632595.1	JN632595.1	JN632595.1	JN632595.1	JN632595.1	JN632595.1		AY449526.1
Ammotragus lervia	EF466060.1	EF466060.1	EF466060.1	EF466060.1	EF466060.1	EF466060.1	AY846803.1	DQ236282.1
Antidorcas marsupialis	NC_020678.1	NC_020678.1	NC_020678.1	NC_020678.1	NC_020678.1	NC_020678.1	AF210187.1	AF210209.1
Antilocapra americana	JN632597.1	JN632597.1	JN632597.1	JN632597.1	JN632597.1	JN632597.1	AF165669.1	AF165670.1
Antilope cervicapra	AP003422.1	AP003422.1	AP003422.1	AP003422.1	AP003422.1	AP003422.1		JX647828.1
Axis axis	JN632599.1	JN632599.1	JN632599.1	JN632599.1	JN632599.1	JN632599.1	DQ379329.1	
Bison bison	NC_012346.1	NC_012346.1	NC_012346.1	NC_012346.1	NC_012346.1	NC_012346.1		EF693850.1
Capreolus capreolus	JN632610.1	JN632610.1	JN632610.1	JN632610.1	JN632610.1	JN632610.1		AY449527.1
Capricornis crispus	AP003429.1	AP003429.1	AP003429.1	AP003429.1	AP003429.1	AP003429.1		
Cervus elaphus	AB245427.2	AB245427.2	AB245427.2	AB245427.2	AB245427.2	AB245427.2	AY846793.1	AY449528.1
Cervus eldi	HM138200.1	HM138200.1	HM138200.1	HM138200.1	HM138200.1	HM138200.1		
Cervus unicolor	EF035448.1	EF035448.1	EF035448.1	EF035448.1	EF035448.1	EF035448.1	DQ379334.1	
Elaphurus davidianus	JN399997.1	JN399997.1	JN399997.1	JN399997.1	JN399997.1	JN399997.1	DQ379337.1	
Equus przewalskii	HQ439484.1	HQ439484.1	HQ439484.1	HQ439484.1	HQ439484.1	HQ439484.1		
Gazella dorcas	JN632637.1	JN632637.1	JN632637.1	JN632637.1	JN632637.1	JN632637.1	MF180032.1	MF180095.1
Giraffa camelopardalis	AP003424.1	AP003424.1	AP003424.1	AP003424.1		AP003424.1	AF165701.1	AF165702.1
Hippopotamus amphibius	AP003425.1	AP003425.1	AP003425.1	AP003425.1	AP003425.1	AP003425.1		
Hylochoerus meinertzhageni	GQ338941.1		GQ338968.1	KJ192834.1				
Kobus ellipsiprymnus	JN632651.1	JN632651.1	JN632651.1	JN632651.1	JN632651.1	JN632651.1	AF165765.1	KF205266.1
Kobus leche	NC_018603.1		NC_018603.1	NC_018603.1	NC_018603.1	NC_018603.1	KF205258.1	AF210207.1

Litocranius walleri	JN632653.1	JN632653.1	JN632653.1	JN632653.1	JN632653.1	JN632653.1	AF210188.1	AF210210.1
Madoqua kirkii	JN632654.1	JN632654.1	JN632654.1	JN632654.1	JN632654.1	JN632654.1	AF165757.1	AF165758.1
Mazama gouazoupira	JN632658.1	JN632658.1	JN632658.1	JN632658.1	JN632658.1	JN632658.1	DQ379344.1	
Muntiacus muntjak	AY225986.1	AY225986.1	AY225986.1	AY225986.1	AY225986.1	AY225986.1		
Muntiacus reevesi	AF527537.1	AF527537.1	AF527537.1	AF527537.1	AF527537.1	AF527537.1	AF165677.1	AF165678.1
Odocoileus hemionus	NC_020729.1	NC_020729.1	NC_020729.1	NC_020729.1	NC_020729.1	NC_020729.1	AF165685.1	AF165686.1
Odocoileus virginianus	HQ332445.1	HQ332445.1	HQ332445.1	HQ332445.1	HQ332445.1	HQ332445.1	DQ379346.1	
Ovis ammon	KT781689.1	KT781689.1	KT781689.1	KT781689.1	KT781689.1	KT781689.1	AY846805.1	AY449530.1
Ovis aries	AF010406.1	AF010406.1	AF010406.1	AF010406.1	AF010406.1	AF010406.1	AF165789.1	AF165790.1
Rangifer tarandus	AB245426.1	AB245426.1	AB245426.1	AB245426.1	AB245426.1	AB245426.1	AF165693.1	AF165694.1
Sus scrofa	KJ782448.1	KJ782448.1	KJ782448.1	KJ782448.1	KJ782448.1	KJ782448.1		
Sylvicapra grimmia	JN632701.1	JN632701.1	JN632701.1	JN632701.1	JN632701.1	JN632701.1	AF210195.1	AF210217.1

Table S4.

Genbank accession numbers of the 72 cetaceans species used in this study.

Species	12S	16S	CYTB	COI	ND2	ND4	RAG1	RHOD	GHR
Balaenoptera borealis	AP006470.1	AP006470.1	AP006470.1	AP006470.1	AP006470.1	AP006470.1	EU445018.1		
Balaenoptera physalus	KC572720.1	KC572720.1	KC572720.1	KC572720.1	KC572720.1	KC572720.1	EU445016.1	KC676961.1	
Cephalorhynchus heavisidii	JN632624.1	JN632624.1	JN632624.1	JN632624.4	JN632624.1	JN632624.1			
Cephalorhynchus hectori			AF084071.1						
Delphinapterus leucas	NC_034236.1	NC_034236.1	NC_034236.1	NC_034236.1	NC_034236.1	NC_034236.1	JN414899.1	KC676964.1	JN414703.1
Delphinus delphis	MF669498.1	MF669498.1	MF669498.1	MF669498.1	MF669498.1	MF669498.1	EU697428.1		
Feresa attenuata	NC_019588.1	NC_019588.1	NC_019588.1	NC_019588.1	NC_019588.1	NC_019588.1			
Globicephala macrorhynchus	NC_019578.2	NC_019578.2	NC_019578.2	NC_019578.2	NC_019578.2	NC_019578.2			
Globicephala melas	HM060334.1	HM060334.1	HM060334.1	HM060334.1	HM060334.1	HM060334.1			
Grampus griseus	EU557095.1	EU557095.1	EU557095.1	EU557095.4	EU557095.1	EU557095.1	GQ368537.1		
Hyperoodon ampullatus	NC_005273.1	NC_005273.1	NC_005273.1	NC_005273.1	NC_005273.1	NC_005273.1			
Inia geoffrensis	NC_005276.1	NC_005276.1	NC_005276.1	NC_005276.1	NC_005276.1	NC_005276.1	EU189406.1	KC676967.1	JN414702.1
Kogia breviceps	NC_005272.1	NC_005272.1	NC_005272.1	NC_005272.1	NC_005272.1	NC_005272.1	JN414901.1	KC676968.1	JN414705.1
Kogia sima		MG000942.1	EU517708.1	KF356667.1			GQ368544.1		
Lagenorhynchus acutus	JF504713.1	JF504723.1	AF084075.1	EU496356.1					
Lagenorhynchus cruciger			AF084068.1						
Lagenorhynchus obliquidens	NC_035426.1	NC_035426.1	NC_035426.1	NC_035426.1	NC_035426.1	NC_035426.1	JF505024.1		
Lipotes vexillifer	NC_007629.1	NC_007629.1	NC_007629.1	NC_007629.1	NC_007629.1	NC_007629.1	JF701668.1		
Megaptera novaeangliae	AP006467.1	AP006467.1	AP006467.1	AP006467.1	AP006467.1	AP006467.1		KC676969.1	JN414696.1
Mesoplodon europaeus	KC776690.2	KC776690.2	KC776690.2	KC776690.2	KC776690.2	KC776690.2			
Mesoplodon mirus			AY579552.1	EU496309.1					

Monodon monoceros	NC_005279.1	NC_005279.1	NC_005279.1	NC_005279.1	NC_005279.1	NC_005279.1	EU189405.1		
Neophocaena phocaenoides	KR108307.1	KR108307.1	KR108307.1	KR108307.1	KR108307.1	KR108307.1	GQ368539.1	KC676970.1	
Orcinus orca	GU187219.1	GU187219.1	GU187219.1	GU187219.1	GU187219.1	GU187219.1	EU697425.1		
Phocoena phocoena	MF669494.1	MF669494.1	MF669494.1	MF669494.1	MF669494.1	MF669494.1	JN414900.1	KC676971.1	JN414704.1
Phocoena sinus			AF084051.1						
Phocoena spinipinnis	U13099.1	U13122.1	HM572306.1						
Phocoenoides dalli		JF504729.1		EU496318.1			GQ368538.1	KC676972.1	
Physeter macrocephalus	KU891394.1	KU891394.1	KU891394.1	KU891394.1	KU891394.1	KU891394.1	EU445013.1	KC676973.1	JN414706.1
Platanista gangetica	AF334510.1	AF304064.1	AY102526.1						
Pontoporia blainvillei	NC_005277.1	NC_005277.1	NC_005277.1	NC_005277.1	NC_005277.1	NC_005277.1	EU189407.1	KC676975.1	JN414708.1
Pseudorca crassidens	M060332.1	M060332.1	M060332.1	M060332.1	M060332.1	M060332.1	EU697426.1		
Sotalia fluviatilis	AF304055.1	AF304061.1	DQ086828.1	EU496374.1	EF027023.1		JF505023.1		
Stenella attenuata	KX857349.1	KX857349.1	KX857349.1	KX857349.1	KX857349.1	KX857349.1	GQ368533.1		
Stenella coeruleoalba	EU557097.1	EU557097.1	EU557097.1	EU557097.1	EU557097.1	EU557097.1	EU697429.1		
Stenella frontalis		JF504720.1	AF084090.1	EU496354.1					
Stenella longirostris	KX857460.1	KX857460.1	KX857460.1	KX857460.1	KX857460.1	KX857460.1	JF505020.1		
Tursiops truncatus	EU557093.1	EU557093.1	EU557093.1	EU557093.1	KU992212.1	EU557093.1	GQ368532.1		JN414697.1
Ziphius cavirostris	KC776717.1	KC776717.1	KC776717.1	KC776717.1	KC776717.1	KC776717.1	EU445014.1	KC676977.1	
Monachus schauinslandi	NC_008421.1	NC_008421.1	NC_008421.1	NC_008421.1	NC_008421.1	NC_008421.1			DQ205821.1
Monachus monachus	GU174602.1		AY377327.1	AY377142.1	AY377275.1	AY377337.1			DQ205822.1
Mirounga angustirostris	GU174601.1	AY377388.1	AY377325.1	AY377139.1	AY377272.1	AY377334.1			GU931128.1
Mirounga leonina	NC_008422.1	NC_008422.1	NC_008422.1	NC_008422.1	NC_008422.1	NC_008422.1			
Leptonychotes weddelli	NC_008424.1	NC_008424.1	NC_008424.1	NC_008424.1	NC_008424.1	NC_008424.1		GU167875.1	
Ommatophoca rossii	GU174600.1	AY377385.1	AY377322.1	AY377133.1	AY377269.1	AY377331.1			DQ205824.1
Lobodon carcinophaga	NC_008423.1	NC_008423.1	NC_008423.1	NC_008423.1	NC_008423.1	NC_008423.1		GU167586.1	DQ205819.1
Hydrurga leptonyx	NC_008425.1	NC_008425.1	NC_008425.1	NC_008425.1	NC_008425.1	NC_008425.1		GU167587.1	DQ205818.1

Cystophora cristata	NC_008427.1	NC_008427.1	NC_008427.1	NC_008427.1	NC_008427.1	NC_008427.1	GU167584.1	DQ205816.1
Erignathus barbatus	NC_008426.1	NC_008426.1	NC_008426.1	NC_008426.1	NC_008426.1	NC_008426.1	GU167870.1	DQ205817.1
Halichoerus grypus	NC_001602.1	NC_001602.1	NC_001602.1	NC_001602.1	NC_001602.1	NC_001602.1		DQ205826.1
Phoca groenlandica	GU174596.1	NC_008429.1	NC_008429.1	NC_008429.1	NC_008429.1	NC_008429.1	GU167583.1	DQ205825.1
Phoca fasciata	NC_008428.1	NC_008428.1	NC_008428.1	NC_008428.1	NC_008428.1	NC_008428.1	GU167873.1	
Phoca largha	KT818831.1	KT818831.1	KT818831.1	KT818831.1	KT818831.1	KT818831.1	GU167871.1	DQ205827.1
Phoca caspica	NC_008431.1	NC_008431.1	NC_008431.1	NC_008431.1	NC_008431.1	NC_008431.1		DQ205828.1
Phoca sibirica	NC_008432.1	NC_008432.1	NC_008432.1	NC_008432.1	NC_008432.1	NC_008432.1		
Phoca hispida	NC_008433.1	NC_008433.1	NC_008433.1	NC_008433.1	NC_008433.1	NC_008433.1		DQ205823.1
Phoca vitulina	AM181032.1	AM181032.1	AM181032.1	AM181032.1	AM181032.1	AM181032.1	GU167577.1	JN414717.1
Zalophus californianus	NC_008416.1	NC_008416.1	NC_008416.1	NC_008416.1	NC_008416.1	NC_008416.1	AB365087.1	GU931126.1
Eumetopias jubatus	NC_004030.2	NC_004030.2	NC_004030.2	NC_004030.2	NC_004030.2	NC_004030.2		DQ205813.1
Otaria byronia			AY377328.1	AY377149.1	AY377282.1	AY377344.1		DQ205812.1
Neophoca cinerea	NC_008419.1	NC_008419.1	NC_008419.1	NC_008419.1	NC_008419.1	NC_008419.1		
Phocarctos hookeri	NC_008418.1	NC_008418.1	NC_008418.1	NC_008418.1	NC_008418.1	NC_008418.1		
Callorhinus ursinus	NC_008415.3	NC_008415.3	NC_008415.3	NC_008415.3	NC_008415.3	NC_008415.3		
Arctocephalus townsendi	NC_008420.1	NC_008420.1	NC_008420.1	NC_008420.1	NC_008420.1	NC_008420.1		
Arctocephalus philippii			AF380895.1					
Arctocephalus galapagoensis			AF380900.1					
Arctocephalus australis	GU174605.1		AY377329.1	AY377150.1	AY377283.1	AY377345.1		DQ205810.1
Arctocephalus forsteri	KT693370.1	KT693370.1	KT693370.1	KT693370.1	KT693370.1	KT693370.1		JN414716.1
Arctocephalus tropicalis			U18457.1					DQ205814.1
Arctocephalus pusillus	NC_008417.1	NC_008417.1	NC_008417.1	NC_008417.1	NC_008417.1	NC_008417.1		
Odobenus rosmarus	NC_004029.2	NC_004029.2	NC_004029.2	NC_004029.2	NC_004029.2	NC_004029.2		GU931129.1

Table S5.

Genbank accession numbers of the 68 primates species used in this study.

Species	12S	16S	CYTB	COI	ND2	ND4	TYR	RAG1
Alouatta caraya	NC_021938.1	NC_021938.1	NC_021938.1	NC_021938.1	NC_021938.1	NC_021938.1	HM757551.1	HM759098.1
Alouatta palliata	AF069964.1	U38997.1	AY065878.1				HM757552.1	AY065910.1
Aotus trivirgatus	AF069977.1	AB107211.1	HQ005499.1	HQ005481.1	AY250707.1	AY250707.2	HM757559.1	HM759106.1
Ateles fusciceps	AY012132.1	AY011164.1	KR902370.1				HM757562.1	AY065916.1
Ateles geoffroyi		AB116026.1	KR902381.1	EF658646.1		AF053685.1	HM757563.1	AY065918.1
Ateles paniscus	KX381745.1		KR902369.1	JF459104.1				HM759112.1
Avahi laniger	NC_021940.1	NC_021940.1	NC_021940.1	NC_021940.1	NC_021940.1	NC_021940.1	HM757602.1	
Cacajao calvus	NC_021967.1	NC_021967.1	NC_021967.1	NC_021967.1	NC_021967.1	NC_021967.1	HM757565.1	HM759113.1
Callithrix argentata			AF245065.1				HM757540.1	HM759088.1
Callithrix jacchus	NC_025586.1	NC_025586.1	NC_025586.1	NC_025586.1	NC_025586.1	NC_025586.1	LC217163.1	HM759090.1
Callithrix penicillata	NC_030788.1	NC_030788.1	NC_030788.1	NC_030788.1	NC_030788.1	NC_030788.1	HM757545.1	HM759092.1
Cebuella pygmaea	NC_021942.1	NC_021942.1	NC_021942.1	NC_021942.1	NC_021942.1	NC_021942.1	HM757546.1	HM759093.1
Cebus apella	JN380205.1	JN380205.1	JN380205.1	JN380205.1	JN380205.1	JN380205.1	HM757568.1	HM759116.1
Cercocebus atys	NC_028592.1	NC_028592.1	NC_028592.1	NC_028592.1	NC_028592.1	NC_028592.1		
Cercopithecus ascanius	L35202.1	AF435523.1		AY972695.1			HM757462.1	HM759017.1
Cheirogaleus major	NC_035655.1	NC_035655.1	NC_035655.1	NC_035655.1	NC_035655.1	NC_035655.1		
Colobus polykomos			AF020411.1	AY972692.1		DQ399703.1	HM757477.1	HM759030.1
Erythrocebus patas	NC_021947.1	NC_021947.1	NC_021947.1	NC_021947.1	NC_021947.1	NC_021947.1	HM757478.1	HM759031.1
Eulemur fulvus	AB371086.1	AB371086.1	AB371086.1	AB371086.1	AB371086.1	AB371086.1	HM757608.1	EU342312.1
Eulemur macaco	AB371088.1	AB371088.1	AB371088.1	AB371088.1	AB371088.1	AB371088.1	HM757609.1	HM759153.1
Eulemur mongoz	NC_010300.1	NC_010300.1	NC_010300.1	NC_010300.1	NC_010300.1	NC_010300.1	HM757610.1	EU342315.1
Galago senegalensis	AB371092.1	AB371092.1	AB371092.1	AB371092.1	AB371092.1	AB371092.1	HM757622.1	HM759166.1

Galagoides demidoff	DQ073491.1	KJ193089.1	KP410669.1	KJ192819.1				
Gorilla gorilla	KF914214.1	KF914214.1	KF914214.1	KF914214.1	KF914214.1	KF914214.1	HM757529.1	HM759077.1
Homo sapiens	AB196722.1	DQ834564.1	JN034136.1	EU586511.1	JN034119.1	JN034131.1		NM_000448.2
Hylobates agilis	NC_014042.1	NC_014042.1	NC_014042.1	NC_014042.1	NC_014042.1	NC_014042.1	HM757521.1	HM759070.1
Hylobates lar	NC_002082.1	NC_002082.1	NC_002082.1	NC_002082.1	NC_002082.1	NC_002082.1	HM757522.1	HM759071.1
Hylobates moloch	HQ622784.1	HQ622784.1	HQ622784.1	HQ622784.1	HQ622784.1	HQ622784.1		
Lagothrix lagotricha	NC_021951.1	NC_021951.1	NC_021951.1	NC_021951.1	NC_021951.1	NC_021951.1	HM757538.1	HM759086.1
Lemur catta	KJ944228.1	KJ944228.1	KJ944228.1	KJ944228.1	KJ944228.1	KJ944228.1	HM757614.1	HM759158.1
Leontopithecus rosalia	NC_021952.1	NC_021952.1	NC_021952.1	NC_021952.1	NC_021952.1	NC_021952.1	HM757548.1	HM759095.1
Loris tardigradus	NC_012763.1	NC_012763.1	NC_012763.1	NC_012763.1	NC_012763.1	NC_012763.1	HM757623.1	HM759167.1
Macaca arctoides	NC_025201.1	NC_025201.1	NC_025201.1	NC_025201.1	NC_025201.1	NC_025201.1	HM757481.1	HM759033.1
Macaca fascicularis	KM851032.1	KM851032.1	KM851032.1	KM851032.1	KM851032.1	KM851032.1	LC217147.1	
Macaca fuscata	NC_025513.1	NC_025513.1	NC_025513.1	NC_025513.1	NC_025513.1	NC_025513.1		
Macaca mulatta	JQ821843.1	JQ821843.1	JQ821843.1	JQ821843.1	JQ821843.1	JQ821843.1	HM757486.1	HM759037.1
Macaca nemestrina	NC_026976.1	NC_026976.1	NC_026976.1	NC_026976.1	NC_026976.1	NC_026976.1	HM757487.1	HM759038.1
Macaca radiata	NC_036508.1	NC_036508.1	NC_036508.1	NC_036508.1	NC_036508.1	NC_036508.1		
Macaca silenus	NC_025221.1	NC_025221.1	NC_025221.1	NC_025221.1	NC_025221.1	NC_025221.1	HM757491.1	HM759042.1
Mandrillus leucophaeus	NC_028442.1	NC_028442.1	NC_028442.1	NC_028442.1	NC_028442.1	NC_028442.1	HM757495.1	HM759045.1
Mandrillus sphinx	NC_021956.1	NC_021956.1	NC_021956.1	NC_021956.1	NC_021956.1	NC_021956.1	HM757496.1	HM759046.1
Microcebus murinus	NC_028718.1	NC_028718.1	NC_028718.1	NC_028718.1	NC_028718.1	NC_028718.1	HM757601.1	HM759147.1
Miopithecus talapoin	L35205.1	JQ256996.1	JQ256996.1	JQ256996.1				
Nasalis larvatus	JF293094.1	JF293094.1	JF293094.1	JF293094.1	JF293094.1	JF293094.1	HM757498.1	HM759048.1
Nycticebus coucang	NC_002765.1	NC_002765.1	NC_002765.1	NC_002765.1	NC_002765.1	NC_002765.1	HM757625.1	HM759169.1
Otolemur crassicaudatus	KJ434961.1	KJ434961.1	KJ434961.1	KJ434961.1	KJ434961.1	KJ434961.1	HM757619.1	HM759162.1
Pan paniscus	NC_001644.1	NC_001644.1	NC_001644.1	NC_001644.1	NC_001644.1	NC_001644.1	HM757530.1	HM759078.1
Pan troglodytes	JN191201.1	JN191201.1	JN191201.1	JN191201.1	JN191201.1	JN191201.1	HM757532.1	HM759079.1

Papio anubis	KC757406.1	KC757406.1	KC757406.1	KC757406.1	KC757406.1	KC757406.1	HM757499.1	HM759049.1
Papio cynocephalus	NC_020007.2	NC_020007.2	NC_020007.2	NC_020007.2	NC_020007.2	NC_020007.2		
Papio hamadryas	NC_001992.1	NC_001992.1	NC_001992.1	NC_001992.1	NC_001992.1	NC_001992.1	HM757500.1	HM759050.1
Papio papio	NC_020009.2	NC_020009.2	NC_020009.2	NC_020009.2	NC_020009.2	NC_020009.2	HM757501.1	HM759051.1
Papio ursinus	JX946204.2	JX946204.2	JX946204.2	JX946204.2	JX946204.2	JX946204.2		
Pithecia pithecia	AF069971.1	U39007.1	KR902426.1	JF459229.1			HM757594.1	HM759140.1
Pongo pygmaeus	NC_001646.1	NC_001646.1	NC_001646.1	NC_001646.1	NC_001646.1	NC_001646.1	HM757533.1	HM759082.1
Presbytis cristata	NC_023971.1	NC_023971.1	NC_023971.1	NC_023971.1	NC_023971.1	NC_023971.1		
Presbytis obscura	AY863425.1	AY863425.1	AY863425.1	AY863425.1	AY863425.1	AY863425.1	HM757517.1	HM759066.1
Presbytis rubicunda			JF295111.1					
Pygathrix nemaeus	DQ355302.1	DQ355302.1	DQ355302.1	DQ355302.1	DQ355302.1	DQ355302.1	HM757506.1	HM759056.1
Saguinus fuscicollis		EU497285.1					HM757575.1	HM759123.1
Saguinus midas	KX381776.1	EU497273.1	AJ489760.1	EU185726.1		AF053690.1	HM757579.1	HM759126.1
Saguinus mystax		EU497295.1	HM368073.1				HM757581.1	HM759127.1
Saguinus oedipus	NC_021960.1	NC_021960.1	NC_021960.1	NC_021960.1	NC_021960.1	NC_021960.1	HM757582.1	HM759128.1
Saimiri sciureus	AB371091.1	AB371091.1	AB371091.1	AB371091.1	AB371091.1	AB371091.1	HM757585.1	HM759131.1
Semnopithecus entellus	DQ355297.1	DQ355297.1	DQ355297.1	DQ355297.1	DQ355297.1	DQ355297.1	HM757510.1	HM759059.1
Symphalangus syndactylus	KC757411.1	KC757411.1	KC757411.1	KC757411.1	KC757411.1	KC757411.1	HM757528.1	HM759076.1
Theropithecus gelada	FJ785426.1	FJ785426.1	FJ785426.1	FJ785426.1	FJ785426.1	FJ785426.1	HM757512.1	HM759062.1
Varecia variegata	KJ944251.1	KJ944251.1	KJ944251.1	KJ944251.1	KJ944251.1	KJ944251.1		EU342330.1