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Application Meta

jModeltest 2.1

- (c) 2011-onwards D. Darriba, G.L. Taboada, R. Doallo and D. Posada,
- (1) Department of Biochemistry, Genetics and Immunology
- University of Vigo, 36310 Vigo, Spain.
- (2) Department of Electronics and Systems

University of A Coruna, 15071 A Coruna, Spain.

e-mail: ddarriba@udc.es, dposada@uvigo.es

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Linux 3.19.0-33-generic, arch: amd64, bits: 64, numcores: 4

Citation: Darriba D, Taboada GL, Doallo R and Posada D. 2012. "jModelTest 2: more models, new heuristics and parallel computing". Nature Methods 9, 772.

Notice: This program may contain errors. Please inspect results carefully.

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Settings

Arguments =

Input Alignment: "/home/neal/Desktop/Dropbox/systematics_ZOOL6305_F2015/excercises/unit18_Bayesian/primates_alnMuscle.nex"

NumTaxa = 50

Length = 1,140

Phyml version = 3.0

Phyml binary = PhyML_3.0_linux64

Candidate models = 24

number of substitution schemes = 3

including models with equal/unequal base frequencies (+F)

including models with/without a proportion of invariable sites (+I)

including models with/without rate variation among sites (+G) (nCat = 4)

Optimized free parameters (K) = Substitution parameters + 97 branch lengths + topology

Base tree for likelihood calculations = Maximum Likelihood

Tree topology search operation = NNI

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Model Optimization Results

II	Name	Partition	ı -lnL	p	fA	fC	fG	fΤ	ti/tv	R(a)	R(b)	R(c)	R(d)	R(e)	R(f)	p-inv	shape
1	<u>JC</u>	000000	29706.0609	98	-	-	-	-	-	-	-	-	-	-	-	-	-
2	JC+I	000000	27321.9274	99	-	-	-	-	-	-	-	-	-	-	-	0.3810	-
3	JC+G	000000	26725.6697	99	-	-	-	-	-	-	-	-	-	-	-	-	0.4250
4	JC+I+G	000000	26617.8007	100	-	-	-	-	-	-	-	-	-	-	-	0.3640	1.5540
5	<u>F81</u>	000000	28905.6536	101	0.1831	0.2427	0.1252	0.4490	-	-	-	-	-	-	-	-	-
6	F81+I	000000	26560.9000	102	0.1963	0.2705	0.1169	0.4163	-	-	-	-	-	-	-	0.3800	-
7	F81+G	000000	25833.4109	102	0.1632	0.3525	0.1060	0.3783	-	-	-	-	-	-	-	-	0.4200
8	F81+I+G	000000	25716.6602	103	0.1627	0.3478	0.1062	0.3833	-	-	-	-	-	-	-	0.3580	1.2920
9	<u>K80</u>	010010	27872.2024	99	-	_	-	-	2.7170	-	-	-	-	-	-	-	-

10 <u>K80+I</u>	010010	25	424.51	33 10) -	-		-	-	2	2.9582	-	-	-	-	-	-	0.3810	-
11 <u>K80+G</u>	010010	24	748.49	16 10) -	-		-	-	3	3.3196	-	-	-	-	-	-	-	0.4180
12 <u>K80+I+G</u>	010010	24	629.08	31 10	1 -	-		-	-	3	3.3622	-	-	-	-	-	-	0.3620	1.3120
13 <u>HKY</u>	010010	27	275.30	20 10	2 0.249	92 (0.2337	0.1207	0.396	54 2	2.7199	-	-	-	-	-	-	-	-
14 <u>HKY+I</u>	010010	24	761.89	04 10	3 0.300)9 ().2892	0.0989	0.311	103	3.1761	-	-	-	-	-	-	0.3800	-
15 <u>HKY+G</u>	010010	23	750.67	70 10	3 0.393	17 (0.3546	0.0586	0.195	51 8	8.8175	-	-	-	-	-	-	-	0.3010
16 <u>HKY+I+G</u>	010010	23	631.64	39 10	4 0.378	36 (0.3561	0.0618	0.203	36 6	6.5928	-	-	-	-	-	-	0.3330	0.6100
17 <u>SYM</u>	012345	26	985.99	19 10	3 -	-		-	-	-	-	16.140	3 20.9789	6.2898	2.0323	55.8223	1.0000) -	-
18 <u>SYM+I</u>	012345	24	671.07	37 10	4 -	-		-	-	-	-	9.1388	14.1012	4.0323	0.9714	39.1603	1.0000	0.3790	-
19 <u>SYM+G</u>	012345	24	103.24	59 10	4 -	-		-	-	-	-	5.6769	9.3705	3.0688	0.3593	31.9536	1.0000	-	0.4430
20 <u>SYM+I+G</u>	012345	23	968.38	95 10	5 -	-		-	-	-	-	5.4831	8.9990	3.0837	0.3696	32.0839	1.0000	0.3490	1.2320
21 <u>GTR</u>	012345	26	672.73	23 10	6 0.208	37 (0.1620	0.2095	0.419	98 -	-	29.380	32.1760	5.0322	3.5305	57.1920	1.0000	-	-
22 <u>GTR+I</u>	012345	24	577.78	09 10	7 0.275	54 (0.2415	0.1476	0.335	55 -	-	6.8069	16.5970	2.1511	1.3268	23.7577	1.0000	0.3800	-
23 <u>GTR+G</u>	012345	23	698.64	75 10	7 0.406	62 C	0.3558	0.0539	0.184	1 0 -	-	0.0991	6.0959	0.2936	0.2880	5.8382	1.0000	-	0.2840
24 <u>GTR+I+G</u>	012345	23	591.54	01 10	3 0.385	51 (0.3640	0.0554	0.195	55 -	-	0.1546	5.9045	0.3590	0.3203	4.9894	1.0000	0.3220	0.5400

There are 22 different topologies. The following table shows the models supporting each topology and the rank according to each Information Criterion, as well as Robinson-Foulds and Euclidean distances with the tree of the best-fit model.

ID	Models	Topology	AIC	BI ₁
		(Presbytis entellus.AF012470,Semnopithecus entellus.AF293952.((Nasalis larvatus.U62663,Pygathrix nemaeus.AF295582),	RANK -	0
		(Trachypithecus cristatus.AF295580.((Colobus angolensis.AF295583,Procolobus badius.AF294625). ((Chlorocebus aethiops.JX983730,(Macaca mulatta.U38272,(Mandrillus leucophaeus.JQ068157,		
		(Papio anubis.EU885420,Theropithecus gelada.EU885487)))).	Weight -	1.0000
		((((Bunopithecus hoolock,GU321286,Nomascus leucogenys,GU321259), (Hylobates agilis,AJ010583,Symphalangus syndactylus,GU321282)),(Pongo pygmaeus,X97717,		
		(Homo sapiens.HE647856,Pan troglodytes.X93338))),((Saguinus cruzlimai,KP182174,((Cebus albifrons.FJ529108,	RF -	0
0		(Saimiri boliviensis.AJ315383.((Aotus azarai.DQ098863.		
	GTR+I+G	(Alouatta belzebul.AY374353.2, Ateles geoffroyi, HM222708)), Callicebus lugens. AF524888.2))), Callithrix geoffroyi, HM368005)), (Tupaia belangeri, EU531776, ((Phaner furcifer, AY441456, (Lepilemur aeeclis, DQ108999, (((Varecia variegata, AF081047,	AVG	4.6258
		(Eulemur albifrons.KF708205,(Hapalemur aureus.AY441446,Lemur catta.AF175955))),(Cheirogaleus crossleyi.AY605927,	Distance	
		(Microcebus murinus.AF285557,(Allocebus trichotis.AY441461,Mirza coquereli.AY441462)))).		
		(Propithecus coquereli.HQ731531,(Indri indri.AY441455,Avahi cleesei.EF103295))))),((((Euoticus elegantulus.AY441469, (Galago alleni.KP410660,Otolemur garnettii.AF271412)),(Arctocebus calabarensis.AY441474,Perodicticus potto.AF271413)),	Distance	2.1200
		(Nycticebus pygmaeus.AY441476,Loris lydekkerianus.KP410597)),	VAR -	2.1398
		(Daubentonia madagasca.AY441444,Tarsius wallacei.HM115970)))))))):		
		(Presbytis entellus.AF012470,Semnopithecus entellus.AF293952,((Nasalis larvatus.U62663,Pygathrix nemaeus.AF295582),	RANK -	1
		(Trachypithecus cristatus.AF295580.((Colobus angolensis.AF295583,Procolobus badius.AF294625). ((Chlorocebus aethiops.JX983730,(Macaca mulatta.U38272,(Mandrillus leucophaeus.JQ068157,		
		(Papio anubis.EU885420,Theropithecus gelada.EU885487)))).	Weight -	0.0000
		((((Bunopithecus hoolock,GU321286,Nomascus leucogenys,GU321259),	DE	1.4
		(Hylobates agilis.AJ010583,Symphalangus syndactylus.GU321282)),(Pongo pygmaeus.X97717, (Homo sapiens.HE647856,Pan troglodytes.X93338))),(((Callithrix geoffroyi.HM368005,Saguinus cruzlimai.KP182174),	RF -	14
1	SYM+I+G	(((Alouatta_belzebul.AY374353.2,Ateles_geoffroyi.HM222708),Callicebus_lugens.AF524888.2),	•••	
		((Aotus azarai.DQ098863,Cebus albifrons.FJ529108),Saimiri boliviensis.AJ315383))),(Tupaia belangeri.EU531776, ((Loris lydekkerianus.KP410597,((Euoticus elegantulus.AY441469,(Galago alleni.KP410660,Otolemur garnettii.AF271412)),	AVG Distance	1.1823
		(Nycticebus pygmaeus.AY441476,(Arctocebus calabarensis.AY441474,Perodicticus potto.AF271413)))),	Distance	
		((Daubentonia madagasca.AY441444,Tarsius wallacei.HM115970),(Phaner furcifer.AY441456,(Lepilemur aeeclis.DQ108999,		
		((Propithecus coquereli.HQ731531,(Indri indri.AY441455,Avahi cleesei.EF103295)),((Varecia variegata.AF081047, (Eulemur albifrons.KF708205,(Hapalemur aureus.AY441446,Lemur catta.AF175955))),(Cheirogaleus crosslevi.AY605927,	Distance - VAR -	0.0000
		(Microcebus murinus.AF285557,(Allocebus trichotis.AY441461,Mirza coquereli.AY441462)))))))))));	VAK	
		(Presbytis entellus.AF012470,Semnopithecus entellus.AF293952,((Nasalis larvatus.U62663,Pygathrix nemaeus.AF295582),	RANK -	2
		(Trachypithecus cristatus.AF295580,((Colobus angolensis.AF295583,Procolobus badius.AF294625).	KAINK -	2
		((Chlorocebus aethiops.JX983730,(Macaca mulatta.U38272,(Mandrillus leucophaeus.JQ068157, (Papio anubis.EU885420,Theropithecus gelada.EU885487)))),(((Symphalangus syndactylus.GU321282,	Weight -	0.0000
		(Hylobates agilis.AJ010583,(Bunopithecus hoolock.GU321286,Nomascus leucogenys.GU321259))),(Pongo pygmaeus.X97717,		
		(Homo sapiens.HE647856,Pan troglodytes.X93338))),(((Callithrix geoffroyi.HM368005,Saguinus cruzlimai.KP182174),	RF -	16
2		((Callicebus lugens.AF524888.2,(Alouatta belzebul.AY374353.2,Ateles geoffroyi.HM222708)), ((Aotus azarai.DQ098863,Cebus albifrons.FJ529108),Saimiri boliviensis.AJ315383))),(Tupaia belangeri.EU531776,	AVC	
		((Loris lydekkerianus.KP410597,((Euoticus elegantulus.AY441469,(Galago alleni.KP410660,Otolemur garnettii.AF271412)).	AVG Distance	1.1663
		(Nycticebus pygmaeus.AY441476.(Arctocebus calabarensis.AY441474.Perodicticus potto.AF271413)))).		
		((Daubentonia madagasca.AY441444,Tarsius wallacei.HM115970),(Phaner furcifer.AY441456,(Lepilemur aeeclis.DQ108999, ((Propithecus coquereli.HQ731531,(Ayahi cleesei.EF103295,Indri indri.AY441455)),((Varecia variegata.AF081047,	Distance	
		(Eulemur albifrons.KF708205,(Hapalemur aureus.AY441446,Lemur catta.AF175955))),(Cheirogaleus crossleyi.AY605927,	VAR -	0.0000
		(Microcebus murinus.AF285557,(Allocebus trichotis.AY441461,Mirza coquereli.AY441462))))))))))))))		
		(Presbytis entellus.AF012470,Semnopithecus entellus.AF293952.((Nasalis larvatus.U62663,Pygathrix nemaeus.AF295582),	RANK -	3
		(Trachypithecus cristatus.AF295580,((Colobus angolensis.AF295583,Procolobus badius.AF294625), ((Chlorocebus aethiops.JX983730,(Macaca mulatta.U38272,(Mandrillus leucophaeus.JQ068157,		
		(Papio anubis.EU885420,Theropithecus gelada.EU885487)))).(((Symphalangus syndactylus.GU321282,	Weight -	0.0000
		(Hylobates agilis.AJ010583.(Bunopithecus hoolock.GU321286,Nomascus leucogenys.GU321259))),(Pongo pygmaeus.X97717, (Homo sapiens.HE647856,Pan troglodytes.X93338))),((Callithrix geoffroyi.HM368005,Saguinus cruzlimai.KP182174).	RF -	20
		(Homo sapiens.HE64/856,Pan troglodytes.X93338))),(((Callithrix geoffroy).HM368005,Saguinus cruzlimai.KP1821/4), (Saimiri boliviensis.AJ315383,((Aotus azarai.DO098863.Cebus albifrons.FJ529108),(Callicebus lugens.AF524888.2,	KI -	20
3	00.1.0	(Alouatta belzebul.AY374353.2, Ateles geoffroyi.HM222708))))), (Tupaia belangeri.EU531776.((Phaner furcifer.AY441456,	AVG	
3		(((Varecia variegata.AF081047,(Eulemur albifrons.KF708205,(Hapalemur aureus.AY441446,Lemur catta.AF175955))),	Distance -	1.3285
		(Cheirogaleus crossleyi.AY605927,(Mirza coquereli.AY441462, (Allocebus trichotis.AY441461,Microcebus murinus.AF285557)))),((Avahi cleesei.EF103295,		
		(Indri indri.AY441455,Propithecus coquereli.HQ731531)),Lepilemur aeeclis.DQ108999))),((Loris lydekkerianus.KP410597,		

11/16/2015	JModell est Output		
	((Euoticus elegantulus.AY441469.(Galago alleni.KP410660.Otolemur garnettii.AF271412)),(Nycticebus pygmaeus.AY441476.	Distance _	0.0000
	(Arctocebus calabarensis.AY441474.Perodicticus potto.AF271413)))).	VAR	0.0000
	(Daubentonia madagasca.AY441444,Tarsius wallacei.HM115970))))))));	VIIIC	
	· · · · · · · · · · · · · · · · · · ·		
	(Presbytis entellus.AF012470,Semnopithecus entellus.AF293952.((Trachypithecus cristatus.AF295580.	RANK -	4
	((Colobus angolensis.AF295583,Procolobus badius.AF294625),((Chlorocebus aethiops.JX983730,	KAINK -	4
	((Mandrillus leucophaeus.JQ068157,(Papio anubis.EU885420,Theropithecus gelada.EU885487)),Macaca mulatta.U38272)),		
	(((Nomascus leucogenys.GU321259.(Bunopithecus hoolock.GU321286.	Weight -	0.0000
	(Symphalangus syndactylus.GU321282,Hylobates agilis.AJ010583))),(Pongo pygmaeus.X97717,	o	
	(Homo sapiens.HE647856.Pan troglodytes.X93338))),((((Callicebus lugens.AF524888.2,		
	(Saimiri boliviensis.AJ315383,Cebus albifrons.FJ529108)),Aotus azarai.DQ098863),	RF -	20
HIVV C	(Alouatta belzebul.AY374353.2,Ateles geoffroyi.HM222708)),(Callithrix geoffroyi.HM368005,Saguinus cruzlimai.KP182174)).		
4 HKY+G	(Tupaia belangeri.EU531776,(((((Varecia variegata.AF081047,(Eulemur albifrons.KF708205,		
GTR+G	(Hapalemur aureus.AY441446,Lemur catta.AF175955))),((Propithecus coquereli.HO731531,	AVG	1.0207
	(Indri indri.AY441455,Ayahi cleesei.EF103295)),(((Microcebus murinus.AF285557,	Distance -	1.9207
	(Mirza coquereli.AY441462, Allocebus trichotis, AY441461)), Cheirogaleus crosslevi.AY605927),		
	(Lepilemur aeeclis.DQ108999,Phaner furcifer.AY441456)))),Daubentonia madagasca.AY441444),		
	(((Euoticus elegantulus, AY441469, (Galago alleni, KP410660, Otolemur garnettii, AF271412)).		
	(Arctocebus calabarensis.AY441474,Perodicticus potto.AF271413)),	Distance	2.1334
	(Nycticebus pygmaeus.AY441476,Loris lydekkerianus.KP410597))),Tarsius wallacei.HM115970)))))),	VAR -	2.1334
	(Pygathrix nemaeus.AF295582,Nasalis larvatus.U62663))):		
	**** ********************************		
	(Presbytis entellus.AF012470,Semnopithecus entellus.AF293952,((Trachypithecus cristatus.AF295580, ((Procolobus badius.AF294625,Colobus angolensis.AF295583),((Chlorocebus aethiops.JX983730,(Macaca mulatta.U38272,	RANK -	5
			-
	(Mandrillus leucophaeus, JQ068157, (Papio anubis, EU885420, Theropithecus gelada, EU885487)))).	347 * A .	0.0000
	(((Symphalangus syndactylus,GU321282,(Hylobates agilis,AJ010583,	Weight -	0.0000
	(Bunopithecus hoolock,GU321286,Nomascus leucogenys,GU321259))),(Pongo pygmaeus,X97717,		
	(Homo sapiens.HE647856,Pan troglodytes.X93338))),(((Saimiri boliviensis.AJ315383,	RF -	22
	((Alouatta belzebul.AY374353.2,Ateles geoffroyi.HM222708).		
5 JC	((Callicebus lugens.AF524888.2,Cebus albifrons.FJ529108),Aotus azarai.DQ098863))),		
5 50	(Callithrix geoffroyi.HM368005,Saguinus cruzlimai,KP182174)),(Tupaia belangeri,EU531776,	AVG	
	(((((Euoticus elegantulus.AY441469,(Galago alleni.KP410660,Otolemur garnettii.AF271412)),(Nycticebus pygmaeus.AY441476,	Distance -	1.4604
	(Arctocebus calabarensis.AY441474,Perodicticus potto.AF271413))),Loris lydekkerianus.KP410597),(((Avahi cleesei.EF103295,		
	(Propithecus coquereli.HQ731531.Indri indri.AY441455)).((Varecia variegata.AF081047.(Eulemur albifrons.KF708205.		
	(Hapalemur aureus.AY441446,Lemur catta.AF175955))),(Cheirogaleus crossleyi.AY605927,(Allocebus trichotis.AY441461,		
	(Mirza coquereli.AY441462,Microcebus murinus.AF285557)))),(Lepilemur aeeclis.DQ108999,Phaner furcifer.AY441456))),	Distance _	0.0000
	(Tarsius wallacei.HM115970,Daubentonia madagasca.AY441444))))))).	VAR	0.0000
	(Pygathrix nemaeus.AF295582,Nasalis larvatus.U62663)));		
	(Presbytis entellus.AF012470,Semnopithecus entellus.AF293952,((Trachypithecus cristatus.AF295580,		
	((Procolobus badius, AF294625, Colobus angolensis, AF295583), ((Chlorocebus aethiops, JX983730, (Macaca mulatta, U38272,	RANK -	6
	(Mandrillus leucophaeus.JQ068157,(Papio anubis.EU885420,Theropithecus gelada.EU885487)))).		
	(((Symphalangus syndactylus,GU321282,(Hylobates agilis,AJ010583,	Weight -	0.0000
	(Bunopithecus hoolock.GU321286,Nomascus leucogenys.GU321259))),(Pongo pygmaeus.X97717,		
	(Homo sapiens, HE647856, Pan troglodytes, X93338))),(((Aotus azarai, DO098863, (Callicebus lugens, AF524888.2,	RF -	22
	(Cebus albifrons,FJ529108,Saimiri boliviensis,AJ315383))),(Alouatta belzebul,AY374353,2,Ateles geoffroyi,HM222708)),	Kr -	22
6 10.0	(Saguinus cruzlimai.KP182174,Callithrix geoffroyi.HM368005)),		
6 JC+G	((Tarsius wallacei.HM115970,Daubentonia madagasca.AY441444),((((Euoticus elegantulus.AY441469,	AVG	
	(Galago alleni,KP410660,Otolemur garnettii,AF271412)),(Arctocebus calabarensis,AY441474,Perodicticus potto,AF271413)),	Distance -	1.4735
	(Loris lydekkerianus,KP410597,Nycticebus pygmaeus,AY441476)),(((Varecia variegata,AF081047,	Distance	
	(Eulemur albifrons.KF708205,(Hapalemur aureus.AY441446,Lemur catta.AF175955))),((Cheirogaleus crosslevi.AY605927,		
	(Microcebus murinus.AF285557,(Allocebus trichotis.AY441461,Mirza coquereli.AY441462))),((Avahi cleesei.EF103295,		
	(Indri indri.AY441455,Propithecus coquereli.HO731531)).	Distance	0.0000
	(Lepilemur aeeclis.DQ108999,Phaner furcifer.AY441456)))),Tupaia belangeri.EU531776))))))),	VAR -	0.0000
	(Pygathrix nemaeus.AF295582,Nasalis larvatus.U62663)));		
	(Presbytis entellus.AF012470,Semnopithecus entellus.AF293952,((Trachypithecus cristatus.AF295580,		
	((Procolobus badius.AF294625.Colobus angolensis.AF295583),((Chlorocebus aethiops.JX983730,(Macaca mulatta.U38272.	RANK -	7
	(Mandrillus leucophaeus.JQ068157,(Papio anubis.EU885420,Theropithecus gelada.EU885487)))),		
	· · · · · · · · · · · · · · · · · · ·	Weight -	0.0000
	(((Symphalangus syndactylus.GU321282,(Hylobates agilis.AJ010583,	Weight	0.0000
	(Bunopithecus hoolock.GU321286,Nomascus leucogenys.GU321259))),(Pongo pygmaeus.X97717,	D.F.	20
	(Homo sapiens.HE647856,Pan troglodytes.X93338)),((((Alouatta belzebul.AY374353.2,Ateles geoffroyi.HM222708),	RF -	22
	(Aotus azarai.DQ098863,(Callicebus lugens.AF524888.2,(Saimiri boliviensis.AJ315383,Cebus albifrons.FJ529108)))),		
7 K80	(Callithrix geoffroyi.HM368005,Saguinus cruzlimai.KP182174)),(Tupaia belangeri.EU531776,	AVG	
	(((((Euoticus_elegantulus.AY441469,(Galago_alleni.KP410660,Otolemur_garnettii.AF271412)),(Nycticebus_pygmaeus.AY441476,	Distance -	1.4462
	(Arctocebus calabarensis.AY441474,Perodicticus potto.AF271413))),Loris lydekkerianus.KP410597),(((Indri indri.AY441455,	Distance	
	(Avahi cleesei.EF103295,Propithecus coquereli.HQ731531)).((Varecia variegata.AF081047,(Eulemur albifrons.KF708205,		
	(Hapalemur aureus.AY441446,Lemur catta.AF175955))).(Cheirogaleus crossleyi.AY605927,(Allocebus trichotis.AY441461,	D' .	
	(Mirza coquereli, AY441462, Microcebus murinus, AF285557)))), (Lepilemur aeeclis, DQ108999, Phaner furcifer, AY441456))),	Distance _	0.0000
	(Tarsius wallacei.HM115970,Daubentonia madagasca.AY441444))))))),	VAR	
	(Pygathrix nemaeus.AF295582,Nasalis larvatus.U62663))):		
	(Presbytis entellus.AF012470,Semnopithecus entellus.AF293952.((Nasalis larvatus.U62663.Pygathrix nemaeus.AF295582).	RANK -	8
	(((Colobus angolensis.AF295583,Procolobus badius.AF294625),((Chlorocebus aethiops.JX983730,(Macaca mulatta.U38272,		J
	(Mandrillus leucophaeus.JQ068157.(Papio anubis.EU885420,Theropithecus gelada.EU885487)))).	T.17 . 3	0.0000
	((((Bunopithecus hoolock,GU321286,Nomascus leucogenys,GU321259),	Weight -	0.0000
	(Symphalangus syndactylus.GU321282,Hylobates agilis.AJ010583)),(Pongo pygmaeus.X97717,		
	(Homo sapiens.HE647856.Pan troglodytes.X93338))).(((Callicebus lugens.AF524888.2.((Aotus azarai.DQ098863,	RF -	22
	(Alouatta belzebul.AY374353.2, Ateles geoffroyi.HM222708)), (Cebus albifrons.FJ529108, Saimiri boliviensis.AJ315383))),		
8 SYM+G	nus cruzlimai.KP182174,Callithrix geoffroyi.HM368005)),(Tarsius wallacei.HM115970, aia belangeri.EUS31776,Loris lydekkerianus.KP410597),(((Euoticus elegantulus.AY441469, ARCHITECTURE (CEUTICUS ELEGANTULUS.AY441469, ARCHITECTURE (CEUTICUS ELEGANTULUS.AY441469, ARCHITECTURE (CEUTICUS ELEGANTULUS.AY441469, ARCHITECTURE (CEUTICUS ELEGANTULUS.AY441469,		
O DIMI'G			1.3223
	(Galago alleni.KP410660,Otolemur garnettii.AF271412)),	Distance	
	(Arctocebus calabarensis.AY441474,Perodicticus potto.AF271413)),Nycticebus pygmaeus.AY441476)),		
	(Daubentonia madagasca.AY441444.(((Propithecus coquereli.HQ731531.(Avahi cleesei.EF103295,Indri indri.AY441455)).		
	((Cheirogaleus crossleyi.AY605927,(Microcebus murinus.AF285557,		

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	(Mirza coquereli.AY441462,Allocebus trichotis.AY441461))),(Lepilemur aeeclis.DQ108999,Phaner furcifer.AY441456))), (Varecia variegata.AF081047,(Eulemur albifrons.KF708205, (Hapalemur aureus.AY441446,Lemur catta.AF175955))))))))))),Trachypithecus cristatus.AF295580)));	Distance - VAR	0.0000
	(Presbytis entellus.AF012470.Semnopithecus entellus.AF293952.((Nasalis larvatus.U62663.Pygathrix nemaeus.AF29582), (Trachypithecus cristatus.AF295580.((Colobus angolensis.AF295583.Procolobus badius.AF294625), ((Chlorocebus aethiops.JX983730,Macaca mulatta.U38272),(Mandrillus leucophaeus.J0068157,	RANK -	9
	(Papio anubis, EU885420, Theropithecus gelada, EU885487)), (((Symphalangus syndactylus, GU321282, (Hylobates agilis, AJ010583, (Bunopithecus hoolock, GU321286, Nomascus leucogenys, GU321259))), (Pongo pygmaeus, X97717,	Weight -	0.0000
0 504	(Homo sapiens.HE647856.Pan troglodytes.X93338))).(((Callithrix geoffroyi.HM368005.Saguinus cruzlimai.KP182174), (((Callicebus lugens.AF524888.2.Saimiri boliviensis.AJ315383),(Aotus azarai.DQ098863.Cebus albifrons.FJ529108)),	RF -	24
9 F81	(Alouatta belzebul.AY374353.2,Ateles geoffroyi.HM222708))), ((Tarsius wallacei.HM115970,Daubentonia madagasca.AY441444),(((Euoticus elegantulus.AY441469, (Galago alleni.KP410660,Otolemur garnettii.AF271412)),((Arctocebus calabarensis.AY441474,Perodicticus potto.AF271413), (Loris lydekkerianus.KP410597,Nycticebus pygmaeus.AY441476))),(Tupaia belangeri.EU531776,(((Avahi cleesei.EF103295,	AVG Distance	1.4133
	(Propithecus coquereli.HQ731531,Indri indri.AY441455)).((Varecia variegata.AF081047,(Eulemur albifrons.KF708205, (Hapalemur aureus.AY441446,Lemur catta.AF175955))).(Cheirogaleus crossleyi.AY605927,(Allocebus trichotis.AY441461, (Microcebus murinus.AF285557,Mirza coquereli.AY441462))))), (Lepilemur aeeclis.DQ108999,Phaner furcifer.AY441456))))))))))))))	Distance VAR	0.0000
	(Presbytis entellus.AF012470,Semnopithecus entellus.AF293952.((Nasalis larvatus.U62663,Pygathrix nemaeus.AF295582), (Trachypithecus cristatus.AF295580,((Colobus angolensis.AF295583,Procolobus badius.AF294625), (((Mandrillus leucophaeus.JO068157,(Papio anubis.EU885420,Theropithecus gelada.EU885487)).	RANK -	10
	(Macaca mulatta.U38272.Chlorocebus aethiops.JX983730)), ((((Bunopithecus hoolock.GU321286.Nomascus leucogenys.GU321259),	Weight -	0.0000
	(Hylobates agilis.AJ010583.Symphalangus syndactylus.GU321282)),(Pongo pygmaeus.X97717, (Homo sapiens.HE647856,Pan troglodytes.X93338))),(((Callithrix geoffroyi.HM368005.Saguinus cruzlimai.KP182174), (Saimiri boliviensis.AJ315383,((Aotus azarai.DO098863,Cebus albifrons.FJ529108),(Callicebus lugens.AF524888.2,	RF -	24
10 F81+I+G	(Alouatta belzebul.AY374353.2,Ateles geoffroyi.HM222708))))), ((Loris lydekkerianus.KP410597, (Nycticebus pygmaeus.AY441444.Tarsius wallacei.HM115970),((Loris lydekkerianus.KP410660,Otolemur garnettii.AF271412)), (Arctocebus calabarensis.AY441474,Perodicticus potto.AF271413)))),((Phaner furcifer.AY441456,	AVG Distance	1.3310
	(((Allocebus trichotis.AY441461,Mirza coquereli.AY441462), (Microcebus murinus.AF285557,Cheirogaleus crossleyi.AY605927)),((Lepilemur aeeclis.DQ108999,(Avahi cleesei.EF103295, (Indri indri.AY441455,Propithecus coquereli.HQ731531))),(Varecia variegata.AF081047,(Eulemur albifrons.KF708205, (Hapalemur aureus.AY441446,Lemur catta.AF175955)))))),Tupaia belangeri.EU531776))))))));	Distance _ VAR _	0.0000
	(Presbytis entellus.AF012470.Semnopithecus entellus.AF293952.((Trachypithecus cristatus.AF295580, ((Procolobus badius.AF294625,Colobus angolensis.AF295583),((Chlorocebus aethiops.JX983730,	RANK -	11
	((Mandrillus leucophaeus, JO068157, (Papio anubis, EU885420, Theropithecus gelada, EU885487)), Macaca mulatta, U38272)), (((Symphalangus syndactylus, GU321282, (Hylobates agilis, AJ010583,	Weight -	0.0000
	(Bunopithecus hoolock.GU321286,Nomascus leucogenys.GU321259))),(Pongo pygmaeus.X97717, (Homo sapiens.HE647856,Pan troglodytes.X93338))),((((Alouatta belzebul.AY374353.2,Ateles geoffroyi.HM222708), ((Callicebus lugens.AF524888.2,(Cebus albifrons.FJ529108,Saimiri boliviensis.AJ315383)),Aotus azarai.DQ098863)),	RF -	24
11 K80+G	(Saguinus cruzlimai.KP182174,Callithrix geoffroyi.HM368005)). ((Daubentonia madagasca.AY441444,Tarsius wallacei.HM115970),(((Varecia variegata.AF081047,(Eulemur albifrons.KF708205,(Hapalemur aureus.AY441446,Lemur catta.AF175955))),((Propithecus coquereli.HQ731531,(Avahi cleesei.EF103295,Indri indri.AY441455)),((Cheirogaleus crossleyi.AY605927,(Microcebus murinus.AF285557,	AVG Distance	1.3539
	(Allocebus trichotis.AY441461,Mirza coquereli.AY441462))),(Lepilemur aeeclis.DQ108999,Phaner furcifer.AY441456)))), ((Loris lydekkerianus.KP410597,((Euoticus elegantulus.AY441469,(Galago alleni.KP410660,Otolemur garnettii.AF271412)), (Nycticebus pygmaeus.AY441476, (Arctocebus calabarensis.AY441474,Perodicticus potto.AF271413)))),Tupaia belangeri.EU531776)))))))), (Pygathrix nemaeus.AF295582,Nasalis larvatus.U62663)));	Distance VAR	0.0000
	Presbytis entellus.AF012470.Semnopithecus entellus.AF293952.((Nasalis larvatus.U62663.Pygathrix nemaeus.AF295582). (((Chlorocebus aethiops.JX983730.((Mandrillus leucophaeus.JO068157.	RANK -	12
	(Papio anubis.EU885420.Theropithecus gelada.EU885487)), Macaca mulatta.U38272)), ((((Symphalangus syndactylus.GU321282, (Hylobates agilis.AJ010583, (Bunopithecus hoolock.GU321286, Nomascus leucogenys.GU321259))), (Pongo pygmaeus.X97717, (Homo sapiens.HE647856, Pan troglodytes.X93338))), (((Callithrix geoffrovi.HM368005, Saguinus cruzlimai.KP182174).	Weight -	0.0000
	((Alouatta belzebul.AY374353.2,Ateles geoffroyi.HM222708), (((Cebus albifrons.FJ529108,Saimiri boliviensis.AJ315383),Callicebus lugens.AF524888.2),Aotus azarai.DQ098863))),	RF -	24
12 HKY+I	((Loris lydekkerianus.KP410597.((Euoticus elegantulus.AY441469.(Galago alleni.KP410660.Otolemur garnettii.AF271412)). (Nycticebus pygmaeus.AY441476.(Arctocebus calabarensis.AY441474.Perodicticus potto.AF271413)))). ((((Indri indri.AY441455.(Propithecus coquereli.HO731531,Avahi cleesei.EF103295)).((Varecia variegata.AF081047. (Eulemur albifrons.KF708205.(Hapalemur aureus.AY441446.Lemur catta.AF175955))).(Cheirogaleus crossleyi.AY605927.	AVG Distance	1.3839
	(Microcebus murinus.AF285557,(Allocebus trichotis.AY441461,Mirza coquereli.AY441462))))), (Phaner furcifer.AY441456,Lepilemur aeeclis.DQ108999)),(Daubentonia madagasca.AY441444, (Tarsius wallacei.HM115970,Tupaia belangeri.EU531776))))))), (Colobus angolensis.AF295583,Procolobus badius.AF294625)),Trachypithecus cristatus.AF295580)));	Distance VAR	0.0000
	(Presbytis entellus.AF012470,Semnopithecus entellus.AF293952.((Pygathrix nemaeus.AF295582,Nasalis larvatus.U62663), ((((Chlorocebus aethiops.JX983730,(Macaca mulatta.U38272.(Mandrillus leucophaeus.JQ068157, (Papio anubis.EU885420,Theropithecus gelada.EU885487)))),(((Symphalangus syndactylus.GU321282,	RANK -	13
	(Hylobates agilis.AJ010583.(Bunopithecus hoolock.GU321286,Nomascus leucogenys.GU321259))),(Pongo pygmaeus.X97717, (Homo sapiens.HE647856,Pan troglodytes.X93338))),(((Callithrix geoffrovi.HM368005,Saguinus cruzlimai.KP182174),	Weight -	0.0000
13 SYM	((Alouatta belzebul.AY374353.2,Ateles geoffroyi,HM222708),(Aotus azarai.DQ098863,(Callicebus lugens.AF524888.2, (Saimiri boliviensis.AJ315383,Cebus albifrons.FJ529108))))),((Tarsius wallacei.HM115970,Daubentonia madagasca.AY441444), (((Euoticus elegantulus.AY441469,(Galago alleni.KP410660,Otolemur garnettii.AF271412)),(Nycticebus pygmaeus.AY441476,	RF -	26
	(Arctocebus calabarensis.AY441474,Perodicticus potto.AF271413))),Loris lydekkerianus.KP410597), (Tupaia belangeri.EU531776,((Varecia variegata.AF081047,(Eulemur albifrons.KF708205, (Hapalemur aureus.AY441446,Lemur catta.AF175955))),((Propithecus coquereli.HQ731531,	AVG Distance	1.4842
	(Avahi cleesei.EF103295,Indri indri.AY441455)).((Cheirogaleus crossleyi.AY605927,(Mirza coquereli.AY441462, (Microcebus murinus.AF285557,Allocebus trichotis.AY441461))). (Lepilemur aeeclis.DQ108999,Phaner furcifer.AY441456)))))))))), (Colobus angolensis.AF295583,Procolobus badius.AF294625)),Trachypithecus cristatus.AF295580)));	Distance _ VAR	0.0000

	(Presbytis entellus.AF012470,Semnopithecus entellus.AF293952,((Nasalis larvatus.U62663,Pygathrix nemaeus.AF295582), ((((((Symphalangus syndactylus,GU321282,(Hylobates agilis.AJ010583,	RANK -	14
	(Bunopithecus hoolock.GU321286,Nomascus leucogenys.GU321259))),(Pongo pygmaeus.X97717, (Homo sapiens.HE647856,Pan troglodytes.X93338))),(((Callithrix geoffroyi.HM368005,Saguinus cruzlimai.KP182174),	Weight -	0.0000
	((Alouatta belzebul.AY374353.2,Ateles geoffroyi.HM222708),(Aotus azarai.DQ098863,(Callicebus lugens.AF524888.2, (Cebus albifrons.FJ529108,Saimiri boliviensis.AJ315383))))),((Tupaia belangeri.EU531776,Tarsius wallacei.HM115970),	RF -	26
14 SYM+I	(((((Euoticus elegantulus.AY441469,(Galago alleni.KP410660,Otolemur garnettii.AF271412)),(Nycticebus pygmaeus.AY441476, (Arctocebus calabarensis.AY441474,Perodicticus potto.AF271413))),Loris lydekkerianus.KP410597), ((Varecia variegata.AF081047,(Eulemur albifrons.KF708205,(Hapalemur aureus.AY441446,Lemur catta.AF175955))).	AVG	1.4422
	((Propithecus coquereli.HO731531,(Indri indri.AY441455,Avahi cleesei.EF103295)),((Cheirogaleus crossleyi.AY605927, (Microcebus murinus.AF285557,(Mirza coquereli.AY441462,Allocebus trichotis.AY441461))).	Distance -	1.4422
	(Lepilemur aeeclis.DQ108999,Phaner furcifer.AY441456))))),Daubentonia madagasca.AY441444)))), (((Mandrillus leucophaeus.JQ068157,	Distance _	0.0000
	(Papio anubis.EU885420,Theropithecus gelada.EU885487)),Macaca mulatta.U38272),Chlorocebus aethiops.JX983730)), (Colobus angolensis.AF295583,Procolobus badius.AF294625)),Trachypithecus cristatus.AF295580)));	VAR	0.0000
	(Presbytis entellus.AF012470,Semnopithecus entellus.AF293952,((Nasalis larvatus.U62663,Pygathrix nemaeus.AF295582), ((((Macaca mulatta.U38272,(Papio anubis.EU885420,Theropithecus gelada.EU885487)).	RANK -	15
	(Chlorocebus aethiops.,JX983730,Mandrillus leucophaeus.JQ068157)),(((Symphalangus syndactylus.GU321282, (Hylobates agilis.AJ010583,(Bunopithecus hoolock.GU321286,Nomascus leucogenys.GU321259))),(Pongo pygmaeus.X97717, (Homo sapiens.HE647856,Pan troglodytes.X9338))),(((Callithrix geoffrovi.HM368005,Saguinus cruzlimai.KP182174).	Weight -	0.0000
45 504 7	((Alouatta belzebul.AY374353.2, Ateles geoffroyi.HM222708).((Aotus azarai.DQ09863.Cebus albifrons.FJ529108). (Callicebus lugens.AF524888.2, Saimiri boliviensis.AJ315383))).((Tupaja belangeri.EU531776.(((Avahi cleesei.EF103295.	RF -	28
15 F81+I	(Indri indri.AY441455,Propithecus coquereli.HO731531)).((Varecia variegata.AF081047,(Eulemur albifrons.KF708205, (Hapalemur aureus.AY441446,Lemur catta.AF175955))).(Cheirogaleus crossleyi.AY605927,(Allocebus trichotis.AY441461, (Microcebus murinus.AF285557,Mirza coquereli.AY441462)))).(Phaner furcifer.AY441456,Lepilemur aeeclis.DO108999))).	AVG Distance	1.4221
	(Loris lydekkerianus.KP410597,((Euoticus elegantulus.AY441469,()(Galago alleni.KP410660,Otolemur garnettii.AF271412)), (Nycticebus pygmaeus.AY441476,(Arctocebus calabarensis.AY441474,Perodicticus potto.AF271413))))).	Distance	
	(Tarsius wallacei.HM115970,Daubentonia madagasca,AY441444))))), (Colobus angolensis.AF295583,Procolobus badius,AF294625)),Trachypithecus cristatus,AF295580)));	VAR -	0.0000
	(Presbytis entellus.AF012470,Semnopithecus entellus.AF293952,((Trachypithecus cristatus.AF295580, ((Colobus angolensis.AF295583,Procolobus badius.AF294625),(((Mandrillus leucophaeus.JQ068157,	RANK -	16
	(Papio anubis.EU885420.Theropithecus gelada.EU885487)),(Chlorocebus aethiops.JX983730,Macaca mulatta.U38272)), ((((Bunopithecus hoolock.GU321286.Nomascus leucogenys.GU321259),	Weight -	0.0000
	(Hylobates agilis.AJ010583.Symphalangus syndactylus.GU321282)).(Pongo pygmaeus.X97717, (Homo sapiens.HE647856.Pan troglodytes.X9338))).(((Saimiri boliviensis.AJ315383.((Callicebus lugens.AF524888.2, (Alouatta belzebul.AY374353.2,Ateles geoffrovi.HM222708)).(Aotus azarai.DO098863.Cebus albifrons.FJ529108))).	RF -	28
16 F81+G	(Callithrix geoffroyi.HM368005,Saguinus cruzlimai.KP182174)), ((Daubentonia madagasca,AY441444,Tarsius wallacei.HM115970),((Loris lydekkerianus.KP410597,	AVG	
	((Arctocebus calabarensis.AY441474.Perodicticus potto.AF271413), (Nycticebus pygmaeus.AY441476, (Euoticus elegantulus.AY441469, (Galago alleni.KP410660,Otolemur garnettii.AF271412)))), (Tupaia belangeri.EU531776,	Distance -	1.4182
	((Varecia variegata.AF081047,(Eulemur albifrons.KF708205,(Hapalemur aureus.AY441446,Lemur catta.AF175955))), (((Allocebus trichotis.AY441461,Mirza coquereli.AY441462), (Microcebus murinus.AF285557,Cheirogaleus crosslevi.AY605927)),((Avahi cleesei.EF103295,	Distance	
	(Propithecus coquereli.HQ731531,Indri indri.AY441455)).(Lepilemur aeeclis.DQ108999,Phaner furcifer.AY441456)))))))))), (Pygathrix nemaeus.AF295582,Nasalis larvatus.U62663)));	VAR	0.0000
	(Presbytis entellus.AF012470,Semnopithecus entellus.AF293952,((Nasalis larvatus.U62663,Pygathrix nemaeus.AF295582), (Trachypithecus cristatus.AF295580,((Colobus angolensis.AF295583,Procolobus badius.AF294625).	RANK -	17
	(((Chlorocebus aethiops, JX983730, Macaca mulatta. U38272), (Mandrillus leucophaeus. JQ068157, (Papio anubis. EU885420, Theropithecus gelada. EU885487)), (((Symphalangus syndactylus, GU321282,	Weight -	0.0000
	(Hylobates agilis.AJ010583.(Bunopithecus hoolock.GU321286,Nomascus leucogenys.GU321259))).(Pongo pygmaeus.X97717, (Homo sapiens.HE647856,Pan troglodytes.X93338))).(((Callithrix geoffroyi.HM368005,Saguinus cruzlimai.KP182174), ((Aotus azarai.DO098863.((Cebus albifrons.FJ529108,Saimiri boliviensis.AJ315383),Callicebus lugens.AF524888.2)).	RF -	28
17 HKY	(Alouatta belzebul.AY374353.2, Ateles geoffroyi.HM222708))).((Loris lydekkerianus.KP410597.) ((Euoticus elegantulus.AY441469.(Galago alleni.KP410660.Otolemur garnettii.AF2714121)).(Nycticebus pygmaeus.AY441476.	AVG	1.3776
	(Arctocebus calabarensis.AY441474,Perodicticus potto.AF271413)))),((Daubentonia madagasca.AY4414444, (Tarsius wallacei.HM115970,Tupaia belangeri.EU531776)),(((Indri indri.AY441455,	Distance ⁻	1.3770
	(Propithecus coquereli.HQ731531.Avahi cleesei.EF103295)).((Varecia variegata.AF081047,(Eulemur albifrons.KF708205, (Hapalemur aureus.AY441446,Lemur catta.AF175955))).(Cheirogaleus crossleyi.AY605927,(Allocebus trichotis.AY441461, (Microcebus murinus.AF285557.Mirza coquereli.AY441462))))).	Distance _	0.0000
	(Presbytis entellus.AF295582,Nasalis larvatus.U62663),	VAR	
	(Chlorocebus aethiops.JX983730,(Mandrillus leucophaeus.JQ068157,(Macaca mulatta.U38272,	RANK -	18
	(Papio anubis.EU885420,Theropithecus gelada.EU885487)))).((((Symphalangus syndactylus.GU321282, (Hylobates agilis.AJ010583,(Bunopithecus hoolock.GU321286,Nomascus leucogenys.GU321259))),(Pongo pygmaeus.X97717,	Weight -	0.0000
	(Homo sapiens.HE647856.Pan troglodytes.X93338))).(((Callithrix geoffroyi.HM368005,Saguinus cruzlimai.KP182174), ((Alouatta belzebul.AY374353.2,Ateles geoffroyi.HM222708).(Aotus azarai.DQ098863,	RF -	28
18 GTR	((Saimiri boliviensis.AJ315383,Cebus albifrons.FJ529108),Callicebus lugens.AF524888.2)))),(((Tupaia belangeri.EU531776, ((Varecia variegata.AF081047,(Eulemur albifrons.KF708205,(Hapalemur aureus.AY441446,Lemur catta.AF175955))), ((Propithecus coquereli.HQ731531,(Avahi cleesei.EF103295,Indri indri.AY441455)),((Cheirogaleus crossleyi.AY605927,	AVG Distance	1.4847
	(Mirza coquereli.AY441462,(Microcebus murinus.AF285557,Allocebus trichotis.AY441461))), (Lepilemur aeeclis.DQ108999,Phaner furcifer.AY441456))))),(((Euoticus elegantulus.AY441469, (Galago alleni.KP410660,Otolemur garnettii.AF271412)),(Nycticebus pygmaeus.AY441476,	Distance	
	(Arctocebus calabarensis.AY441474,Perodicticus potto.AF271413))),Loris lydekkerianus.KP410597)), (Tarsius wallacei.HM115970,Daubentonia madagasca.AY441444))))))));	VAR	0.0000
	(Presbytis entellus.AF012470,Semnopithecus entellus.AF293952,((Nasalis larvatus.U62663,Pygathrix nemaeus.AF295582), (Trachypithecus cristatus.AF295580,((Colobus angolensis.AF295583,Procolobus badius.AF294625),	RANK -	19
	((Chlorocebus aethiops.JX983730,(Mandrillus leucophaeus.JQ068157,(Macaca mulatta.U38272, (Papio anubis.EU885420,Theropithecus gelada.EU885487)))),((((Hylobates agilis.AJ010583,	Weight -	0.0000
	(Bunopithecus hoolock.GU321286,Nomascus leucogenys.GU321259)),Symphalangus syndactylus.GU321282),		

11/16/2015	jModelTest Output						
19 GTR+I	(Pongo pygmaeus.X97717,(Homo sapiens.HE647856.Pan troglodytes.X93338))), (((Callithrix geoffroyi.HM368005,Saguinus cruzlimai.KP182174),((Alouatta belzebul.AY374353.2,Ateles geoffroyi.HM222708),	RF -	28				
15 GIK 1	((Callicebus lugens.AF524888.2,(Cebus albifrons.FJ529108,Saimiri boliviensis.AJ315383)),Aotus azarai.DQ098863))), (((Daubentonia madagasca.AY441444,(Tupaia belangeri.EU531776,Tarsius wallacei.HM115970)),((Varecia variegata.AF081047, (Eulemur albifrons.KF708205,(Hapalemur aureus.AY441446,Lemur catta.AF175955))),((Propithecus coquereli.HQ731531, (Indri indri.AY441455,Ayahi cleesei.EF103295)),((Cheirogaleus crosslevi.AY605927,(Microcebus murinus.AF285557,	AVG Distance	1.4044				
	(Mirza coquereli.AY441462,Allocebus trichotis.AY441461))),(Lepilemur aeeclis.DO108999,Phaner furcifer.AY441456))))), (((Euoticus elegantulus.AY441469,(Galago alleni.KP410660,Otolemur garnettii.AF271412)),(Nycticebus pygmaeus.AY441476, (Arctocebus calabarensis.AY441474,Perodicticus potto.AF271413))),Loris lydekkerianus.KP410597)))))))));	Distance _ VAR	0.0000				
	(Presbytis entellus.AF012470,Semnopithecus entellus.AF293952,((Trachypithecus cristatus.AF295580, ((Procolobus badius.AF294625,Colobus angolensis.AF295583),(((Macaca mulatta.U38272,	RANK -	20				
	(Papio anubis.EU885420,Theropithecus gelada.EU885487)), (Chlorocebus aethiops,JX983730,Mandrillus leucophaeus.JQ068157)),(((Symphalangus syndactylus.GU321282, (Hylobates agilis.AJ010583,(Bunopithecus hoolock.GU321286,Nomascus leucogenys.GU321259))),(Pongo pygmaeus.X97717,						
	(Hydodales agins.A5010565, Paintophinecus nodiock.G0521266, Nolinascus leucogenys.G0521259)), (Fongo pyginaeus.X97/17, (Homo sapiens.HE647856, Pan troglodytes.X93338))), ((((Alouatta belzebul.AY374353.2, Ateles geoffroyi.HM222708), (Aotus azarai.DQ098863, (Saimiri boliviensis.AJ315383, (Cebus albifrons.FJ529108, Callicebus lugens.AF524888.2)))),	RF -	30				
20 JC+I	(Saguinus cruzlimai.KP182174.Callithrix geoffroyi.HM368005)),(Tupaia belangeri.EU531776.(((Loris lydekkerianus.KP410597, ((Euoticus elegantulus.AY441469.(Galago alleni.KP410660.Otolemur garnettii.AF271412)),(Nycticebus pygmaeus.AY441476, (Arctocebus calabarensis.AY441474.Perodicticus potto.AF271413))),((Varecia variegata.AF081047, (Eulemur albifrons.KF708205.(Hapalemur aureus.AY441446,Lemur catta.AF175955))),((Indri indri.AY441455,	AVG Distance	1.4355				
	(Propithecus coquereli.HQ731531,Avahi cleesei.EF103295)),((Cheirogaleus crossleyi.AY605927,(Allocebus trichotis.AY441461, (Microcebus murinus.AF285557,Mirza coquereli.AY441462))),(Lepilemur aeeclis.DQ108999,Phaner furcifer.AY441456))))), (Daubentonia madagasca.AY441444,Tarsius wallacei.HM115970))))))), (Pygathrix nemaeus.AF295582,Nasalis larvatus.U62663)));	Distance VAR	0.0000				
	(Presbytis entellus.AF012470,Semnopithecus entellus.AF293952,((Trachypithecus cristatus.AF295580, ((Procolobus badius.AF294625,Colobus angolensis.AF295583),(((((Alouatta belzebul.AY374353.2,Ateles geoffroyi.HM222708), ((Callicebus lugens.AF524888.2,(Cebus albifrons.FJ529108,Saimiri boliviensis.AJ315383)),Aotus azarai,DO098863)).	RANK -	21				
	(Canicebus lugens.AF324888.2,(Cebus albitrons.FJ329108,Salmiri boliviensis.AJ315383)),Aotus azarai.DQ098883)), (Saguinus cruzlimai.KP182174.Callithrix geoffroyi.HM368005)),(((Loris lydekkerianus.KP410597, ((Euoticus elegantulus.AY441469,(Galago alleni.KP410660,Otolemur garnettii.AF271412)),(Nycticebus pygmaeus.AY441476.	Weight -	0.0000				
	(Arctocebus calabarensis.AY441474,Perodicticus potto.AF271413)))),(((Indri indri.AY441455, (Propithecus coquereli.HQ731531,Avahi cleesei.EF103295)),(((Mirza coquereli.AY441462,	RF -	30				
21 K80+I	(Microcebus murinus.AF285557,Allocebus trichotis.AY441461)),Cheirogaleus crossleyi.AY605927), (Lepilemur aeeclis.DQ108999,Phaner furcifer.AY441456))),(Varecia variegata.AF081047,(Eulemur albifrons.KF708205, (Hapalemur aureus.AY441446,Lemur catta.AF175955))))),(Daubentonia madagasca.AY441444, (Tarsius wallacei.HM115970,Tupaia belangeri,EU531776)))),((Pongo pygmaeus.X97717, (Homo sapiens.HE647856,Pan troglodytes.X93338)),(Symphalangus syndactylus.GU321282,(Hylobates agilis.AJ010583,	AVG Distance	1.4030				
	(Bunopithecus hoolock,GU321286,Nomascus leucogenys,GU321259)))),((Macaca mulatta.U38272, (Mandrillus leucophaeus,JQ068157, (Papio anubis,EU885420,Theropithecus gelada,EU885487))),Chlorocebus aethiops,JX983730)))),	Distance VAR	0.0000				

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BIC Selection Results

(Pygathrix nemaeus.AF295582,Nasalis larvatus.U62663)));

Model selected

Model GTR+I+G partition 012345 -lnL 23591.5401 K 108 freqA 0.3851 R(a) 0.1546 freqC 0.3640 R(b) 5.9045 freqG 0.0554 R(c) 0.3590 freqT 0.1955 R(d) 0.3203 ti/tv R(e) 4.9894 **R(f)** 1.0000 **p-inv** 0.3220 **gamma** 0.5400

Best model tree

(Presbytis_entellus.AF012470:0.06260053,Semnopithecus_entellus.AF293952:0.05440159, $((Nasalis_larvatus.U62663:0.16290054, Pygathrix_nemaeus.AF295582:0.20398718):0.03883014, (Trachypithecus_cristatus.AF295580:0.14817784, Pygathrix_nemaeus.AF295580:0.14817784, Pygathrix_nemaeus.AF295580:0.1481784, Pygathrix_nemaeus.AF295580:0.1481784, Pygathrix_nemaeus.AF295580:0.1481784, Pygathrix_nemaeus.AF295580:0.1481784, Pygathrix_nemaeus.AF295580:0.1481784, Pygathrix_nemaeus.AF295580:0.1481784, Pygathrix_nemaeus.AF295580:0.1481784, Pygathrix_nemaeus.AF295580:0.1481784, Pygathrix_nemaeus.AF295580, Pygathrix_nemaeus.AF2950, Pygathrix_nemaeus.AF2950, Pygathrix_nemaeus.AF2950, Py$ ((Colobus_angolensis.AF295583:0.26762624,Procolobus_badius.AF294625:0.11875615):0.08215646,((Chlorocebus_aethiops.JX983730:0.17721358, (Macaca_mulatta.U38272:0.16408439,(Mandrillus_leucophaeus.JQ068157:0.19374179, (Papio_anubis.EU885420:0.08840545, Theropithecus_gelada.EU885487:0.09785766):0.12214898):0.03054510):0.03694287):0.08609634, ((((Bunopithecus_hoolock.GU321286:0.09072429,Nomascus_leucogenys.GU321259:0.12723698):0.01926343, (Hylobates_agilis.AJ010583:0.11451740,Symphalangus_syndactylus.GU321282:0.09281593):0.01112729):0.16578181,(Pongo_pygmaeus.X97717:0.24586594, (Homo_sapiens.HE647856:0.12688076,Pan_troglodytes.X93338:0.09283822):0.09422574):0.08054602):0.13099623,((Saguinus_cruzlimai.KP182174:0.19052271, ((Cebus_albifrons.FJ529108:0.30176911,(Saimiri_boliviensis.AJ315383:0.41648963,((Aotus_azarai.DQ098863:0.16353371, (Ålouatta_belzebul.AY374353.2:0.11591793,Ateles_geoffroyi.HM222708:0.15864525):0.06051363):0.02197544,Callicebus_lugens.AF524888.2:0.26614217):0.01798854 (Tupaia_belangeri.EU531776:0.66162977,(((((Euoticus_elegantulus.AY441469:0.19363998, (Galago_alleni.KP410660:0.10374593,Otolemur_garnettii.AF271412:0.13626362):0.04491254):0.19637809, (Arctocebus_calabarensis.AY441474:0.28614203,Perodicticus_potto.AF271413:0.23422826):0.18021497):0.03827714, (Nycticebus_pygmaeus.AY441476:0.27833015,Loris_lydekkerianus.KP410597:0.40761398):0.06780500):0.19340257,

 $(Daubentonia_madagasca. AY441444: 0.46325828, Tarsius_wallacei. HM115970: 0.54900847): 0.02136464): 0.03661152, (Phaner_furcifer. AY441456: 0.36619339, Tarsius_wallacei. HM115970: 0.02136464): 0.03661152, (Phaner_furcifer. AY441456: 0.36619339, Tarsius_wallacei. HM115970: 0.02136464): 0.03661152, (Phaner_furcifer. AY4414456: 0.36619339, Tarsius_wallacei. HM115970: 0.02136464): 0.03661152, (Phaner_furcifer. AY441456: 0.36619339, Tarsius_wallacei. HM115970: 0.02136464): 0.03661152, (Phaner_furcifer. AY441456: 0.3661939, Tarsius_wallacei. HM115970: 0.02136464): 0.03661152, (Phaner_furcifer. AY441456: 0.3661939, Tarsius_wallacei. HM115970: 0.02136464): 0.03661152, (Phaner_furcifer. AY44146650, Tarsius_wallacei. HM115970: 0.02136464, Tarsius_wallacei. HM115970: 0.021364, Tarsius_wallacei. HM115970:$

(Lepilemur_aeeclis.DQ108999:0.44392117,(((Varecia_variegata.AF081047:0.28565294,(Eulemur_albifrons.KF708205:0.14976179,

(Hapalemur_aureus.AY441446:0.13039641,Lemur_catta.AF175955:0.06584348):0.04669467):0.04100714):0.10479991,

(Cheirogaleus_crossleyi.AY605927:0.16546523,(Microcebus_murinus.AF285557:0.27968839,

(Allocebus_trichotis.AY441461:0.24534854,Mirza_coquereli.AY441462:0.24957920):0.03496036):0.05514135):0.09888642):0.03409842,

(Propithecus_coquereli.HQ731531:0.12605233,

 $(Indri_indri.AY441455:0.22335483,Avahi_cleesei.EF103295:0.22969772):0.02772321):0.09028065):0.01601198):0.06891548):0.17513439):0.11333129):0.23300020):0.01601198):0.06891548):0.17513439):0.11333129):0.23300020):0.01601198):0.06891548):0.07513439):0.01601198):0.06891548):0.07513439):0.01601198):0.06891548):0.07513439$ Display best model tree in PhyloWidget

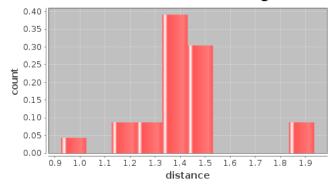
Model	-lnL		BIC	delta	weight	cumWeight
GTR+I+G	23591.5401	108	47943.2689	0.0000	1.0000	1.0000
HKY+I+G	23631.6489	104	47995.3312	52.0623	0.0000	1.0000
GTR+G	23698.6475	107	48150.4448	207.1760	0.0000	1.0000
HKY+G	23750.6770	103	48226.3488	283.0799	0.0000	1.0000
SYM+I+G	23968.3895	105	48675.8513	732.5824	0.0000	1.0000
SYM+G	24103.2459	104	48938.5252	995.2564	0.0000	1.0000
GTR+I	24577.7809	107	49908.7117	1965.4428	0.0000	1.0000
K80+I+G	24629.0831	101	49969.0833	2025.8144	0.0000	1.0000
SYM+I	24671.0737	104	50074.1808	2130.9120	0.0000	1.0000
K80+G	24748.4916	100	50200.8616	2257.5927	0.0000	1.0000
HKY+I	24761.8904	103	50248.7755	2305.5067	0.0000	1.0000
K80+I	25424.5133	100	51552.9050	3609.6361	0.0000	1.0000
F81+I+G	25716.6602	103	52158.3152	4215.0463	0.0000	1.0000
F81+G	25833.4109	102	52384.7776	4441.5088	0.0000	1.0000
F81+I	26560.9000	102	53839.7558	5896.4870	0.0000	1.0000
JC+I+G	26617.8007	100	53939.4798	5996.2109	0.0000	1.0000
<u>GTR</u>	26672.7323	106	54091.5756	6148.3067	0.0000	1.0000
JC+G	26725.6697	99	54148.1790	6204.9101	0.0000	1.0000
<u>SYM</u>	26985.9919	103	54696.9785	6753.7096	0.0000	1.0000
<u>HKY</u>	27275.3020	102	55268.5599	7325.2911	0.0000	1.0000
JC+I	27321.9274	99	55340.6943	7397.4254	0.0000	1.0000
<u>K80</u>	27872.2024	99	56441.2443	8497.9754	0.0000	1.0000
<u>F81</u>	28905.6536	101	58522.2244	10578.9555	0.0000	1.0000
<u>JC</u>	29706.0609	98	60101.9226	12158.6538	0.0000	1.0000
-lnL:	negative lo	g lil	kelihod			
K:	number of	estii	mated param	eters		
BIC:	Bayesian I	nfor	mation Crite	rion		
delta:	BIC differ	ence				
weight:	BIC weigh	ıt				

Confidence interval

cumWeight: cumulative BIC weight

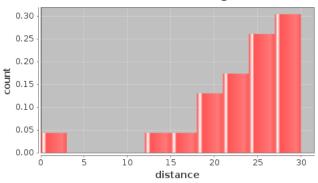
There are 24 models in the 100.00% confidence interval: GTR+I+G HKY+I+G GTR+G HKY+G SYM+I+G SYM+G GTR+I K80+I+G SYM+I K80+G HKY+I K80+I F81+I+G F81+G F81+I JC+I+G GTR JC+G SYM HKY JC+I K80 F81 JC

BIC euclidean distances histogram



Euclidean distances histogram from each model optimized tree to GTR+I+G tree.

BIC RF distances histogram



Robinson-Foulds distances histogram from the different topologies to GTR+I+G topology.

PAUP block

PAUP* Commands Block:

If you want to load the selected model and associated estimates in PAUP*, attach the next block of commands after the data in your PAUP file:

[!

Likelihood settings from best-fit model (GTR+I+G) selected by BIC with jModeltest 2.1.7 v20150220 on Mon Nov 16 15:34:22 CST 2015]

BEGIN PAUP;

 $Lset\ base=(0.3851\ 0.3640\ 0.0554\)\ nst=6\ rmat=(0.1546\ 5.9045\ 0.3590\ 0.3203\ 4.9894)\ rates=gamma\ shape=0.5400\ ncat=4\ pinvar=0.3220;\ END;$

Forum - Discussion group - Contact