

Supplementary Data

Table A. Difference in log likelihood values ($-\Delta\text{LnL}$) between independent and paired analyses of the G/A gradient for all species pairs.

	Ptr	Ppa	Ggo	Ppy	Pab	Hla	Msy	Pha	Cae	Cgu	Tob	Cal	Nco	Lca	Tba	Tbe	Cva
Hsa	2.88	2.96	3.01	4.68	6.27	1.59	7.60	3.38	14.4	49.9	138	87.7	43.1	108	69.5	25.8	4.62
Ptr		0.05	0.19	14.3	17.6	7.46	2.48	1.18	5.03	29.3	102	60.1	24.1	76.6	44.5	11.9	0.32
Ppa			0.05	14.0	17.7	7.15	1.86	0.75	4.52	29.8	103	60.8	24.0	76.8	44.7	12.1	0.21
Ggo				13.6	17.6	6.79	1.45	0.43	4.31	30.7	104	62.0	24.4	77.9	45.5	12.6	0.22
Ppy					0.94	1.17	19.0	12.0	31.3	83.6	190	131	72.7	154	107	50.3	16.8
Pab						3.31	25.2	16.8	38.4	90.3	200	138	80.8	164	116	56.1	21.1
Hla							10.9	5.70	20.4	65.1	161	107	55.6	128	86.0	36.6	9.22
Msy								0.88	1.61	27.1	94.2	56.1	19.2	68.5	38.8	10.8	1.19
Pha									4.52	34.3	109	66.7	26.6	81.8	48.8	15.1	0.92
Cae										16.0	71.8	39.4	9.89	49.7	24.9	4.81	2.78
Cgu											21.7	5.66	1.55	11.8	2.12	3.34	24.9
Tob												5.32	27.1	1.99	11.9	40.4	91.7
Cal													10.0	2.09	2.36	17.0	53.3
Nco														14.7	3.20	2.51	19.5
Lca															4.43	26.1	67.8
Tba																9.51	38.1
Tbe																	9.28

¹Species that are not significantly different based on the assumption that $2\Delta\text{LnL} \sim \chi^2_2$ are in bold.

Table B. Maximum likelihood values, differences in log likelihood values ($\Delta \ln L$), slopes, intercepts, and 95% CIs for the hierarchical clustering analyses with the G/A gradient¹.

Group	ML	$\Delta \ln L$	Slope	95% CI	Intercept	95% CI	Members	
1	-2667.90	0.045	1.125 (0.677,1.522)		1.653 (1.402,1.948)		Ppa,	Ggo
2	-4007.13	0.148	1.056 (0.702,1.373)		1.690 (1.482,1.930)		Ptr,	Group 1
3	-5277.08	0.324	1.075 (0.794,1.376)		1.657 (1.468,1.860)		Cva	Group 2
4	-2582.91	0.885	1.663 (1.238,2.110)		1.319 (1.090,1.568)		Msy,	Pha
5	-2360.60	0.941	1.116 (0.357,1.779)		2.739 (2.322,3.286)		Ppy,	Pab
6	-2762.16	1.551	0.737 (0.484,0.970)		1.006 (0.859,1.185)		Cgu,	Nco
7	-2491.48	1.586	1.175 (0.557,1.736)		2.146 (1.806,2.543)		Hsa,	Hla
8	-2880.06	1.986	0.502 (0.325,0.661)		0.693 (0.588,0.817)		Tob,	Lca
9	-2830.13	2.363	0.537 (0.332,0.746)		0.886 (0.752,1.042)		Cal,	Tba
10	-7862.62	2.632	1.265 (1.025,1.506)		1.544 (1.397,1.698)		Group 3	Group 4
11	-4029.29	3.391	0.722 (0.495,0.949)		1.084 (0.948,1.235)		Tbe	Group 6
12	-9222.54	5.990	1.307 (1.079,1.517)		1.469 (1.341,1.613)		Cae	Group 10
13	-4858.54	6.463	1.166 (0.742,1.612)		2.413 (2.127,2.715)		Group 5	Group 7
14	-5719.94	9.753	0.518 (0.385,0.647)		0.784 (0.698,0.872)		Group 8	Group 9
15	-9794.26	45.03	0.588 (0.467,0.702)		0.901 (0.827,0.984)		Group 11	Group 14
16	-14140.68	59.59	1.292 (1.085,1.494)		1.747 (1.624,1.879)		Group 12	Group 13
17	-24431.85	496.91	0.928 (0.821,1.043)		1.351 (1.281,1.428)		Group 15	Group 16

Table C. Maximum likelihood values, differences in log likelihood values ($\Delta \ln L$), slopes, intercepts, and 95% CIs for the mixture model analyses with the G/A gradient.

Models	ML	$\Delta \ln L$	#	slope	95%CI	intercept	95%CI
1	-21889.1	--	1	0.93 (	0.81 , 1.06)	1.35 (	1.26 , 1.43)
2	-21387.1	501.96	1	0.58 (	0.47 , 0.69)	0.85 (	0.78 , 0.93)
			2	1.32 (	1.09 , 1.52)	1.76 (	1.64 , 1.91)
3	-21337.3	49.81	1	0.58 (	0.47 , 0.70)	0.85 (	0.78 , 0.93)
			2	1.35 (	1.11 , 1.56)	1.44 (	1.32 , 1.62)
			3	1.20 (	0.66 , 1.62)	2.39 (	2.13 , 2.78)
4	-21310.9	26.41	1	0.47 (	0.32 , 0.62)	0.77 (	0.67 , 0.86)
			2	0.74 (	0.54 , 0.90)	0.95 (	0.84 , 1.08)
			3	1.38 (	1.07 , 1.57)	1.44 (	1.33 , 1.64)
			4	1.16 (	0.70 , 1.60)	2.42 (	2.16 , 2.77)
5	-21307.0	3.88	1	0.49 (	0.32 , 0.62)	0.76 (	0.66 , 0.86)
			2	0.74 (	0.55 , 0.91)	0.92 (	0.84 , 1.07)
			3	1.60 (	1.14 , 1.88)	1.12 (	0.98 , 1.56)
			4	1.20 (	0.63 , 1.58)	1.69 (	1.49 , 2.51)
			5	1.23 (	-0.18 , 1.76)	2.51 (	2.16 , 3.74)
6	-20304.1	2.87	1	0.45 (	0.38 , 0.59)	0.76 (	0.68 , 0.81)
			2	0.69 (	0.54 , 0.82)	0.96 (	0.86 , 1.00)
			3	1.58 (	1.43 , 1.77)	1.17 (	1.02 , 1.26)
			4	1.14 (	-1.20 , 1.32)	1.64 (	1.15 , 1.74)
			5	1.14 (	0.89 , 1.44)	2.18 (	1.68 , 2.25)
			6	1.16 (	0.81 , 2.03)	2.69 (	1.97 , 2.99)

Table D. Maximum likelihood values, slopes, intercepts, and 95% CIs for the C/T gradient.

Species	Max Like	Slope	Intercept
<i>Homo sapiens</i>	-574.51	-0.099 (-0.160, -0.035)	0.204 (0.156, 0.258)
<i>Pan troglodytes</i>	-537.51	-0.070 (-0.128, -0.014)	0.168 (0.128, 0.218)
<i>Pan paniscus</i>	-485.38	-0.054 (-0.103, -0.007)	0.138 (0.103, 0.181)
<i>Gorilla gorilla</i>	-552.40	-0.072 (-0.130, -0.013)	0.175 (0.129, 0.226)
<i>Pongo pygmaeus</i>	-532.06	-0.096 (-0.148, -0.045)	0.188 (0.147, 0.235)
<i>Pongo pygmaeus abelii</i>	-553.20	-0.067 (-0.127, -0.008)	0.173 (0.128, 0.230)
<i>Hylobates lar</i>	-676.38	-0.094 (-0.169, -0.025)	0.241 (0.187, 0.306)
<i>Macaca sylvanus</i>	-579.12	-0.069 (-0.119, -0.018)	0.174 (0.134, 0.223)
<i>Papio hamadryas</i>	-629.60	-0.112 (-0.169, -0.046)	0.228 (0.179, 0.280)
<i>Cercopithecus aethiops</i>	-560.25	-0.095 (-0.150, -0.049)	0.190 (0.152, 0.241)
<i>Colobus guereza</i>	-603.77	-0.056 (-0.121, 0.006)	0.171 (0.124, 0.228)
<i>Trachypithecus obscurus</i>	-556.39	-0.041 (-0.093, 0.015)	0.145 (0.106, 0.191)
<i>Cebus albifrons</i>	-503.50	-0.097 (-0.140, -0.052)	0.161 (0.123, 0.202)
<i>Nycticebus coucang</i>	-731.42	-0.151 (-0.217, -0.090)	0.276 (0.224, 0.340)
<i>Lemur catta</i>	-381.70	-0.028 (-0.062, 0.004)	0.081 (0.057, 0.113)
<i>Tarsius bancanus</i>	-354.41	-0.048 (-0.084, -0.015)	0.091 (0.064, 0.124)
<i>Tupaia belangeri</i>	-720.16	-0.090 (-0.149, -0.034)	0.213 (0.170, 0.267)
<i>Cynocephalus variegatus</i>	-657.06	-0.124 (-0.185, -0.066)	0.236 (0.189, 0.292)

Table E. Maximum likelihood values, differences in log likelihood values ($\Delta \ln L$), slopes, intercepts, and 95% CIs for the hierarchical clustering analyses with the C/T gradient

Group	ML	$\Delta \ln L$	Slope	95% CI	Intercept	95% CI	Members
1	-1132.319	0.005	-0.068 (-0.108,-0.028)		0.173 (0.143,0.210)		Pab, Msy
2	-1684.743	0.019	-0.069 (-0.103,-0.033)		0.174 (0.147,0.204)		Ggo, Group 1
3	-1092.322	0.020	-0.097 (-0.132,-0.056)		0.190 (0.156,0.223)		Ppy, Cae
4	-1286.693	0.040	-0.118 (-0.167,-0.074)		0.232 (0.196,0.275)		Pha, Cva
5	-2222.444	0.193	-0.069 (-0.097,-0.042)		0.172 (0.150,0.196)		Ptr, Group 2
6	-2007.164	0.312	-0.109 (-0.145,-0.075)		0.226 (0.199,0.260)		Tbe, Group 4
7	-2826.595	0.383	-0.066 (-0.094,-0.042)		0.172 (0.152,0.195)		Cgu, Group 5
8	-736.590	0.476	-0.037 (-0.062,-0.009)		0.085 (0.061,0.108)		Lca, Tba
9	-1667.328	0.497	-0.097 (-0.132,-0.064)		0.194 (0.167,0.225)		Hsa, Group 3
10	-3383.627	0.642	-0.062 (-0.085,-0.037)		0.167 (0.147,0.189)		Tob, Group 7
11	-1408.715	0.918	-0.126 (-0.174,-0.076)		0.261 (0.219,0.306)		Hla, Nco
12	-990.204	1.322	-0.076 (-0.107,-0.040)		0.149 (0.119,0.178)		Ppa, Cal
13	-5052.389	1.434	-0.073 (-0.091,-0.057)		0.176 (0.163,0.192)		Group 9, Group 10
14	-3418.328	<u>2.449</u>	-0.117 (-0.145,-0.086)		0.240 (0.214,0.267)		Group 6, Group 11
15	-6051.045	8.452	-0.076 (-0.090,-0.061)		0.172 (0.158,0.185)		Group 12, Group 13
16	-9494.782	25.408	-0.087 (-0.099,-0.074)		0.192 (0.180,0.204)		Group 14, Group 15
17	-10298.870	67.498	-0.081 (-0.093,-0.068)		0.179 (0.169,0.190)		Group 8, Group 16

Table F. Maximum likelihood values, slopes, intercepts, and 95% CIs for the Y/R gradient at four-fold redundant sites.

Species	Max Like	Slope	Intercept
<i>Homo sapiens</i>	-1400.82	-0.085 (-0.320, 0.104)	0.852 (0.709, 1.038)
<i>Pan troglodytes</i>	-1402.11	-0.097 (-0.284, 0.111)	0.860 (0.697, 1.022)
<i>Pan paniscus</i>	-1397.57	-0.108 (-0.309, 0.093)	0.866 (0.719, 1.047)
<i>Gorilla gorilla</i>	-1390.70	-0.062 (-0.261, 0.127)	0.832 (0.699, 0.995)
<i>Pongo pygmaeus</i>	-1424.58	-0.099 (-0.305, 0.092)	0.853 (0.715, 1.027)
<i>Pongo pygmaeus abelii</i>	-1425.01	-0.091 (-0.294, 0.120)	0.863 (0.696, 1.029)
<i>Hylobates lar</i>	-1422.70	0.009 (-0.219, 0.207)	0.839 (0.688, 1.014)
<i>Macaca sylvanus</i>	-1386.52	-0.062 (-0.324, 0.178)	0.964 (0.789, 1.181)
<i>Papio hamadryas</i>	-1391.75	0.033 (-0.211, 0.260)	0.866 (0.712, 1.057)
<i>Cercopithecus aethiops</i>	-1380.54	0.013 (-0.208, 0.228)	0.867 (0.707, 1.052)
<i>Colobus guereza</i>	-1329.45	0.064 (-0.176, 0.310)	0.845 (0.688, 1.029)
<i>Trachypithecus obscurus</i>	-1308.35	-0.074 (-0.300, 0.143)	0.916 (0.748, 1.112)
<i>Cebus albifrons</i>	-1329.75	-0.086 (-0.394, 0.194)	1.091 (0.888, 1.347)
<i>Nycticebus coucang</i>	-1349.58	0.125 (-0.193, 0.410)	1.034 (0.830, 1.290)
<i>Lemur catta</i>	-1301.46	0.231 (-0.043, 0.487)	0.831 (0.661, 1.037)
<i>Tarsius bancanus</i>	-1313.28	0.089 (-0.148, 0.315)	0.852 (0.689, 1.054)
<i>Tupaia belangeri</i>	-1330.48	0.498 (0.110, 0.822)	0.973 (0.777, 1.248)
<i>Cynocephalus variegatus</i>	-1402.81	0.024 (-0.218, 0.291)	1.003 (0.820, 1.193)

Table G. Maximum likelihood values, differences in log likelihood values ($\Delta \ln L$), slopes, intercepts, and 95% CIs for the hierarchical clustering analyses with the Y/R gradient at four-fold redundant sites.

Group	ML	$\Delta \ln L$	Slope	95% CI	Intercept	95% CI	Members
1	-2802.93	0.004	-0.089	(-0.239,0.044)	0.855	(0.753,0.971)	Hsa, Ptr
2	-4227.95	0.01	-0.09	(-0.216,0.026)	0.858	(0.779,0.958)	Pab, Group 1
3	-2822.16	0.013	-0.104	(-0.239,0.030)	0.860	(0.755,0.972)	Ppa, Ppy
4	-2721.22	0.019	0.049	(-0.112,0.211)	0.856	(0.739,0.983)	Pha, Cgu
5	-5618.69	0.04	-0.085	(-0.197,0.010)	0.852	(0.779,0.941)	Ggo, Group 2
6	-8440.90	0.047	-0.091	(-0.185,-0.011)	0.855	(0.794,0.926)	Group 3 Group 5
7	-4101.82	0.064	0.038	(-0.104,0.162)	0.859	(0.762,0.973)	Cae, Group 4
8	-2732.74	0.173	-0.027	(-0.228,0.158)	1.044	(0.910,1.196)	Cal, Cva
9	-2731.25	0.203	-0.032	(-0.182,0.120)	0.877	(0.764,1.002)	Hla Tob,
10	-5415.33	0.233	0.05	(-0.066,0.165)	0.857	(0.772,0.946)	Tba, Group 7
11	-6802.41	0.564	0.027	(-0.077,0.137)	0.878	(0.799,0.960)	Msy, Group 10
12	-9534.65	0.994	0.01	(-0.081,0.096)	0.878	(0.814,0.944)	Group 9 Group 11
13	-4035.75	1.56	0.064	(-0.086,0.221)	0.968	(0.857,1.090)	Lca, Group 8
14	-5387.22	<u>1.89</u>	0.08	(-0.058,0.219)	0.984	(0.885,1.093)	Nco, Group 13
15	-17986.9	11.4	-0.039	(-0.100,0.018)	0.867	(0.822,0.916)	Group 6 Group 12
16	-6729.54	11.8	0.145	(0.015,0.268)	0.988	(0.892,1.087)	Tbe, Group 14
17	-24778.0	61.5	-0.001	(-0.052,0.055)	0.901	(0.857,0.942)	Group 15 Group 16