
Wed Oct 19 16:49:15 CEST 2011 (Mac OS X 10.6.8, arch: x86_64)

Reading data file "Glacuoreseda_ITS_ITS1.nex"... OK.

number of sequences: 17

number of sites: 275

*
* COMPUTATION OF LIKELIHOOD SCORES WITH PHYML *
*
*

Settings:

Phyml version = 3.0

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 + 31 branch lengths + topology

Base tree for likelihood calculations = ML tree

Maximum likelihood estimation for the JC model.

ML optimized tree topology

Model = JC

partition = 000000

-lnL = 693.4909

K = 32

Computation time = 00h:00:00:02 (00h:00:00:02)

Maximum likelihood estimation for the JC+I model.

ML optimized tree topology

Model = JC+I

partition = 000000

-lnL = 692.8769

K = 33

p-inv = 0.3720

Computation time = 00h:00:00:03 (00h:00:00:05)

Maximum likelihood estimation for the JC+G model.

ML optimized tree topology

Model = JC+G

partition = 000000

-lnL = 692.9726

K = 33

gamma shape = 1.1130

Computation time = 00h:00:00:04 (00h:00:00:09)

Maximum likelihood estimation for the JC+I+G model.

ML optimized tree topology

Model = JC+I+G

partition = 000000

-lnL = 692.8781
K = 34
p-inv = 0.3570
gamma shape = 87.7710
Computation time = 00h:00:00:07 (00h:00:01:06)

Maximum likelihood estimation for the F81 model.

ML optimized tree topology
Model = F81
partition = 000000
-lnL = 692.5123
K = 35
freqA = 0.2222
freqC = 0.2726
freqG = 0.2617
freqT = 0.2435
Computation time = 00h:00:00:02 (00h:00:01:09)

Maximum likelihood estimation for the F81+I model.

ML optimized tree topology
Model = F81+I
partition = 000000
-lnL = 691.8666
K = 36
freqA = 0.2216
freqC = 0.2733
freqG = 0.2614
freqT = 0.2438
p-inv = 0.3790
Computation time = 00h:00:00:04 (00h:00:02:03)

Maximum likelihood estimation for the F81+G model.

ML optimized tree topology
Model = F81+G
partition = 000000
-lnL = 691.9607
K = 36
freqA = 0.2216
freqC = 0.2732
freqG = 0.2614
freqT = 0.2438
gamma shape = 1.0650
Computation time = 00h:00:00:06 (00h:00:02:09)

Maximum likelihood estimation for the F81+I+G model.

ML optimized tree topology
Model = F81+I+G
partition = 000000
-lnL = 691.8678
K = 37
freqA = 0.2217
freqC = 0.2733
freqG = 0.2612
freqT = 0.2438
p-inv = 0.3650
gamma shape = 87.6190
Computation time = 00h:00:01:01 (00h:00:04:00)

Maximum likelihood estimation for the K80 model.

ML optimized tree topology
Model = K80
partition = 010010
-lnL = 678.1020
K = 33
kappa = 4.7508 (ti/tv = 2.3754)
Computation time = 00h:00:00:02 (00h:00:04:02)

Maximum likelihood estimation for the K80+I model.

ML optimized tree topology
Model = K80+I
partition = 010010
-lnL = 677.3384
K = 34
kappa = 4.8997 (ti/tv = 2.4498)
p-inv = 0.4020
Computation time = 00h:00:00:03 (00h:00:04:05)

Maximum likelihood estimation for the K80+G model.

ML optimized tree topology
Model = K80+G
partition = 010010
-lnL = 677.4440
K = 34
kappa = 4.8908 (ti/tv = 2.4454)
gamma shape = 0.9350
Computation time = 00h:00:00:05 (00h:00:05:00)

Maximum likelihood estimation for the K80+I+G model.

ML optimized tree topology
Model = K80+I+G
partition = 010010
-lnL = 677.3403
K = 35
kappa = 4.8941 (ti/tv = 2.4471)
p-inv = 0.3890
gamma shape = 87.8240
Computation time = 00h:00:00:07 (00h:00:05:07)

Maximum likelihood estimation for the HKY model.

ML optimized tree topology
Model = HKY
partition = 010010
-lnL = 676.8869
K = 36
freqA = 0.2195
freqC = 0.2759
freqG = 0.2627
freqT = 0.2419
kappa = 4.8097 (ti/tv = 2.3964)
Computation time = 00h:00:00:03 (00h:00:06:00)

Maximum likelihood estimation for the HKY+I model.

ML optimized tree topology
Model = HKY+I

partition = 010010
-lnL = 676.1054
K = 37
freqA = 0.2194
freqC = 0.2756
freqG = 0.2638
freqT = 0.2411
kappa = 4.9612 (ti/tv = 2.4704)
p-inv = 0.4060
Computation time = 00h:00:00:05 (00h:00:06:04)

Maximum likelihood estimation for the HKY+G model.

ML optimized tree topology
Model = HKY+G
partition = 010010
-lnL = 676.2098
K = 37
freqA = 0.2194
freqC = 0.2756
freqG = 0.2638
freqT = 0.2412
kappa = 4.9522 (ti/tv = 2.4660)
gamma shape = 0.9150
Computation time = 00h:00:00:06 (00h:00:07:01)

Maximum likelihood estimation for the HKY+I+G model.

ML optimized tree topology
Model = HKY+I+G
partition = 010010
-lnL = 676.1073
K = 38
freqA = 0.2194
freqC = 0.2756
freqG = 0.2637
freqT = 0.2413
kappa = 4.9560 (ti/tv = 2.4681)
p-inv = 0.3940
gamma shape = 87.7230
Computation time = 00h:00:01:00 (00h:00:08:01)

Maximum likelihood estimation for the SYM model.

ML optimized tree topology
Model = SYM
partition = 012345
-lnL = 671.7839
K = 37
R(a) [AC] = 0.3751
R(b) [AG] = 1.3827
R(c) [AT] = 0.5766
R(d) [CG] = 0.2424
R(e) [CT] = 3.8366
R(f) [GT] = 1.0000
Computation time = 00h:00:00:02 (00h:00:08:04)

Maximum likelihood estimation for the SYM+I model.

ML optimized tree topology
Model = SYM+I

partition = 012345
-lnL = 671.0258
K = 38
R(a) [AC] = 0.3591
R(b) [AG] = 1.3361
R(c) [AT] = 0.5572
R(d) [CG] = 0.1952
R(e) [CT] = 3.8951
R(f) [GT] = 1.0000
p-inv = 0.3940
Computation time = 00h:00:00:04 (00h:00:08:07)

Maximum likelihood estimation for the SYM+G model.

ML optimized tree topology
Model = SYM+G
partition = 012345
-lnL = 671.1884
K = 38
R(a) [AC] = 0.3624
R(b) [AG] = 1.3501
R(c) [AT] = 0.5648
R(d) [CG] = 0.2027
R(e) [CT] = 3.8990
R(f) [GT] = 1.0000
gamma shape = 0.9840
Computation time = 00h:00:00:05 (00h:00:09:03)

Maximum likelihood estimation for the SYM+I+G model.

ML optimized tree topology
Model = SYM+I+G
partition = 012345
-lnL = 671.0295
K = 39
R(a) [AC] = 0.3598
R(b) [AG] = 1.3379
R(c) [AT] = 0.5582
R(d) [CG] = 0.1971
R(e) [CT] = 3.8945
R(f) [GT] = 1.0000
p-inv = 0.3820
gamma shape = 87.8850
Computation time = 00h:00:00:09 (00h:00:10:01)

Maximum likelihood estimation for the GTR model.

ML optimized tree topology
Model = GTR
partition = 012345
-lnL = 670.4383
K = 40
freqA = 0.2353
freqC = 0.2678
freqG = 0.2758
freqT = 0.2212
R(a) [AC] = 0.3661
R(b) [AG] = 1.3295
R(c) [AT] = 0.6150
R(d) [CG] = 0.2133

R(e) [CI] = 3.8765
R(f) [GT] = 1.0000
Computation time = 00h:00:00:03 (00h:00:10:04)

Maximum likelihood estimation for the GTR+I model.

ML optimized tree topology
Model = GTR+I
partition = 012345
-lnL = 669.5800
K = 41
freqA = 0.2348
freqC = 0.2694
freqG = 0.2762
freqT = 0.2195
R(a) [AC] = 0.3415
R(b) [AG] = 1.2628
R(c) [AT] = 0.5957
R(d) [CG] = 0.1598
R(e) [CT] = 3.9169
R(f) [GT] = 1.0000
p-inv = 0.4110
Computation time = 00h:00:00:06 (00h:00:11:00)

Maximum likelihood estimation for the GTR+G model.

ML optimized tree topology
Model = GTR+G
partition = 012345
-lnL = 669.7446
K = 41
freqA = 0.2348
freqC = 0.2691
freqG = 0.2764
freqT = 0.2196
R(a) [AC] = 0.3457
R(b) [AG] = 1.2790
R(c) [AT] = 0.6051
R(d) [CG] = 0.1673
R(e) [CT] = 3.9292
R(f) [GT] = 1.0000
gamma shape = 0.8870
Computation time = 00h:00:00:07 (00h:00:11:07)

Maximum likelihood estimation for the GTR+I+G model.

ML optimized tree topology
Model = GTR+I+G
partition = 012345
-lnL = 669.5833
K = 42
freqA = 0.2350
freqC = 0.2693
freqG = 0.2764
freqT = 0.2193
R(a) [AC] = 0.3424
R(b) [AG] = 1.2641
R(c) [AT] = 0.5965
R(d) [CG] = 0.1625
R(e) [CT] = 3.9155
R(f) [GT] = 1.0000

$K(T) [GT] = 1.0000$
 $p\text{-inv} = 0.3970$
 $\text{gamma shape} = 89.0590$
 Computation time = 00h:00:01:02 (00h:00:12:09)

Computation of likelihood scores completed. It took 00h:00:12:09.

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*                                     *
*           AKAIKE INFORMATION CRITERION (AIC)           *
*                                     *
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Model selected:

Model = SYM
 partition = 012345
 $-\ln L = 671.7839$
 $K = 37$
 $R(a) [AC] = 0.3751$
 $R(b) [AG] = 1.3827$
 $R(c) [AT] = 0.5766$
 $R(d) [CG] = 0.2424$
 $R(e) [CT] = 3.8366$
 $R(f) [GT] = 1.0000$

* AIC MODEL SELECTION : Selection uncertainty

Model	$-\ln L$	K	AIC	delta	weight	cumWeight
SYM	671.7839	37	1417.5678	0.0000	0.2762	0.2762
SYM+I	671.0258	38	1418.0516	0.4839	0.2169	0.4931
SYM+G	671.1884	38	1418.3769	0.8091	0.1843	0.6774
SYM+I+G	671.0295	39	1420.0591	2.4913	0.0795	0.7569
GTR	670.4383	40	1420.8765	3.3088	0.0528	0.8097
GTR+I	669.5800	41	1421.1599	3.5921	0.0458	0.8556
GTR+G	669.7446	41	1421.4893	3.9215	0.0389	0.8944
K80	678.1020	33	1422.2041	4.6363	0.0272	0.9216
K80+I	677.3384	34	1422.6769	5.1091	0.0215	0.9431
K80+G	677.4440	34	1422.8881	5.3203	0.0193	0.9624
GTR+I+G	669.5833	42	1423.1665	5.5987	0.0168	0.9792
K80+I+G	677.3403	35	1424.6806	7.1128	0.0079	0.9871
HKY	676.8869	36	1425.7738	8.2061	0.0046	0.9917
HKY+I	676.1054	37	1426.2109	8.6431	0.0037	0.9953
HKY+G	676.2098	37	1426.4195	8.8517	0.0033	0.9987
HKY+I+G	676.1073	38	1428.2147	10.6469	0.0013	1.0000
JC	693.4909	32	1450.9819	33.4141	1.53e-008	1.0000
JC+I	692.8769	33	1451.7537	34.1860	1.04e-008	1.0000
JC+G	692.9726	33	1451.9451	34.3773	9.47e-009	1.0000
JC+I+G	692.8781	34	1453.7562	36.1884	3.83e-009	1.0000
F81	692.5123	35	1455.0245	37.4567	2.03e-009	1.0000
F81+I	691.8666	36	1455.7331	38.1654	1.42e-009	1.0000
F81+G	691.9607	36	1455.9214	38.3536	1.30e-009	1.0000
F81+I+G	691.8678	37	1457.7356	40.1678	5.24e-010	1.0000

 -lnL: negative log likelihood
 K: number of estimated parameters
 AIC: Akaike Information Criterion
 delta: AIC difference
 weight: AIC weight
 cumWeight: cumulative AIC weight

Model selection results also available at the "Model > Show model table" menu

* AIC MODEL SELECTION : Confidence interval

There are 24 models in the 100% confidence interval: [SYM SYM+I SYM+G SYM+I+G GTR GTR+I
 GTR+G K80 K80+I K80+G GTR+I+G K80+I+G HKY HKY+I HKY+G HKY+I+G JC JC+I JC+G JC+I+G F81 F81+I
 F81+G F81+I+G]

* AIC MODEL SELECTION : Parameter importance

Parameter	Importance
fA	0.1672
fC	0.1672
fG	0.1672
fT	0.1672
kappa	0.5702
titv	0.0888
rAC	0.9112
rAG	0.9112
rAT	0.9112
rCG	0.9112
rCT	0.9112
rGT	0.9112
pinv(I)	0.2878
alpha(G)	0.2458
pinv(IG)	0.1055
alpha(IG)	0.1055

 Values have been rounded.

(I): considers only +I models.

(G): considers only +G models.

(IG): considers only +I+G models.

* AIC MODEL SELECTION : Model averaged estimates

Parameter	Model-averaged estimates
fA	0,2338
fC	0,2693
fG	0,2751
fT	0,2217
kappa	0,7553
titv	2,4248
rAC	0,3633
rAG	1 3454


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rAT      0,5727
rCG      0,2087
rCT      3,8799
rGT      1,0000
pinv(I)  0,3975
alpha(G) 0,9639
pinv(IG) 0,3851
alpha(IG) 88,0654

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Numbers have been rounded.

(I): considers only +I models.

(G): considers only +G models.

(IG): considers only +I+G models.

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*                                     *
*      CORRECTED AKAIKE INFORMATION CRITERION (AICc)      *
*                                     *
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Settings:

Sample size = 275

Model selected:

Model = SYM

partition = 012345

-lnL = 671.7839

K = 37

R(a) [AC] = 0.3751

R(b) [AG] = 1.3827

R(c) [AT] = 0.5766

R(d) [CG] = 0.2424

R(e) [CT] = 3.8366

R(f) [GT] = 1.0000

* AICc MODEL SELECTION : Selection uncertainty

Model	-lnL	K	AICc	delta	weight	cumWeight
SYM	671.7839	37	1429.4328	0.0000	0.3159	0.3159
SYM+I	671.0258	38	1430.6110	1.1782	0.1753	0.4911
SYM+G	671.1884	38	1430.9362	1.5035	0.1490	0.6401
K80	678.1020	33	1431.5153	2.0825	0.1115	0.7516
K80+I	677.3384	34	1432.5935	3.1608	0.0650	0.8166
K80+G	677.4440	34	1432.8047	3.3720	0.0585	0.8752
SYM+I+G	671.0295	39	1433.3357	3.9029	0.0449	0.9200
GTR	670.4383	40	1434.8936	5.4609	0.0206	0.9406
K80+I+G	677.3403	35	1435.2246	5.7918	0.0175	0.9581
GTR+I	669.5800	41	1435.9410	6.5083	0.0122	0.9703
GTR+G	669.7446	41	1436.2704	6.8376	0.0103	0.9806
HKY	676.8869	36	1436.9671	7.5344	0.0073	0.9879
HKY+I	676.1054	37	1438.0758	8.6431	0.0042	0.9921
HKY+G	676.2098	37	1438.2845	8.8517	0.0038	0.9959
GTR+I+G	669.5833	42	1438.7355	9.3027	0.0030	0.9989

HKY+I+G	676.1073	38	1440.7740	11.3412	0.0011	1.0000
JC	693.4909	32	1459.7091	30.2764	8.42e-008	1.0000
JC+I	692.8769	33	1461.0649	31.6322	4.27e-008	1.0000
JC+G	692.9726	33	1461.2563	31.8236	3.88e-008	1.0000
JC+I+G	692.8781	34	1463.6728	34.2401	1.16e-008	1.0000
F81	692.5123	35	1465.5685	36.1357	4.50e-009	1.0000
F81+I	691.8666	36	1466.9264	37.4937	2.28e-009	1.0000
F81+G	691.9607	36	1467.1147	37.6819	2.07e-009	1.0000
F81+I+G	691.8678	37	1469.6006	40.1678	5.99e-010	1.0000

-lnL: negative log likelihood
K: number of estimated parameters
AICc: Corrected Akaike Information Criterion
delta: AICc difference
weight: AICc weight
cumWeight: cumulative AICc weight

Model selection results also available at the "Model > Show model table" menu

* AICc MODEL SELECTION : Confidence interval

There are 24 models in the 100% confidence interval: [SYM SYM+I SYM+G K80 K80+I K80+G SYM+I+G GTR K80+I+G GTR+I GTR+G HKY HKY+I HKY+G GTR+I+G HKY+I+G JC JC+I JC+G JC+I+G F81 F81+I F81+G F81+I+G]

* AICc MODEL SELECTION : Parameter importance

Parameter	Importance
fA	0.0625
fC	0.0625
fG	0.0625
fT	0.0625
kappa	0.6135
titv	0.2689
rAC	0.7311
rAG	0.7311
rAT	0.7311
rCG	0.7311
rCT	0.7311
rGT	0.7311
pinv(I)	0.2567
alpha(G)	0.2216
pinv(IG)	0.0664
alpha(IG)	0.0664

Values have been rounded.

- (I): considers only +I models.
- (G): considers only +G models.
- (IG): considers only +I+G models.

* AICc MODEL SELECTION : Model averaged estimates

Model-averaged

Parameter	estimates
fA	0,2310
fC	0,2705
fG	0,2727
fT	0,2258
kappa	2,1191
ti/tv	2,4170
rAC	0,3664
rAG	1,3567
rAT	0,5703
rCG	0,2166
rCT	3,8710
rGT	1,0000
pinv(I)	0,3970
alpha(G)	0,9654
pinv(IG)	0,3847
alpha(IG)	87,9196

Numbers have been rounded.

(I): considers only +I models.

(G): considers only +G models.

(IG): considers only +I+G models.

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*
*          BAYESIAN INFORMATION CRITERION (BIC)
*
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Settings:

sample size = 275

Model selected:

Model = K80

partition = 010010

-lnL = 678.1020

K = 33

kappa = 4.7508 (ti/tv = 2.3754)

* BIC MODEL SELECTION : Selection uncertainty

Model	-lnL	K	BIC	delta	weight	cumWeight
K80	678.1020	33	1541.5575	0.0000	0.7913	0.7913
K80+I	677.3384	34	1545.6471	4.0895	0.1024	0.8937
K80+G	677.4440	34	1545.8583	4.3007	0.0921	0.9859
K80+I+G	677.3403	35	1551.2676	9.7101	0.0062	0.9920
SYM	671.7839	37	1551.3883	9.8308	0.0058	0.9978
SYM+I	671.0258	38	1555.4889	13.9314	0.0007	0.9986
SYM+G	671.1884	38	1555.8142	14.2567	0.0006	0.9992
HKY	676.8869	36	1555.9776	14.4201	0.0006	0.9998
HKY+I	676.1054	37	1560.0314	18.4738	7.71e-005	0.9999
HKY+G	676.2098	37	1560.2401	18.6825	6.94e-005	0.9999

SYM+I+G	671.0295	39	1561.1132	19.5556	4.49e-005	1.0000
GTR	670.4383	40	1565.5474	23.9898	4.89e-006	1.0000
HKY+I+G	676.1073	38	1565.6520	24.0944	4.64e-006	1.0000
JC	693.4909	32	1566.7185	25.1610	2.72e-006	1.0000
GTR+I	669.5800	41	1569.4475	27.8900	6.95e-007	1.0000
GTR+G	669.7446	41	1569.7769	28.2193	5.90e-007	1.0000
JC+I	692.8769	33	1571.1072	29.5496	3.03e-007	1.0000
JC+G	692.9726	33	1571.2986	29.7410	2.76e-007	1.0000
GTR+I+G	669.5833	42	1575.0709	33.5134	4.18e-008	1.0000
JC+I+G	692.8781	34	1576.7264	35.1689	1.83e-008	1.0000
F81	692.5123	35	1581.6115	40.0540	1.59e-009	1.0000
F81+I	691.8666	36	1585.9369	44.3794	1.83e-010	1.0000
F81+G	691.9607	36	1586.1252	44.5676	1.66e-010	1.0000
F81+I+G	691.8678	37	1591.5561	49.9986	1.10e-011	1.0000

-lnL: negative log likelihood
K: number of estimated parameters
BIC: Bayesian Information Criterion
delta: BIC difference
weight: BIC weight
cumWeight: cumulative BIC weight

Model selection results also available at the "Model > Show model table" menu

* BIC MODEL SELECTION : Confidence interval

There are 24 models in the 100% confidence interval: [K80 K80+I K80+G K80+I+G SYM SYM+I SYM+G HKY HKY+I HKY+G SYM+I+G GTR HKY+I+G JC GTR+I GTR+G JC+I JC+G GTR+I+G JC+I+G F81 F81+I F81+G F81+I+G]

* BIC MODEL SELECTION : Parameter importance

Parameter	Importance
fA	0.0007
fC	0.0007
fG	0.0007
fT	0.0007
kappa	1.1809
titv	0.9928
rAC	0.0072
rAG	0.0072
rAT	0.0072
rCG	0.0072
rCT	0.0072
rGT	0.0072
pinv(I)	0.1032
alpha(G)	0.0928
pinv(IG)	0.0062
alpha(IG)	0.0062

Values have been rounded.

(I): considers only +I models.
(G): considers only +G models.

(IG): considers only +I+G models.

* BIC MODEL SELECTION : Model averaged estimates

Parameter	Model-averaged estimates
fA	0,2196
fC	0,2758
fG	0,2630
fT	0,2416
kappa	4,0184
titv	2,3900
rAC	0,3722
rAG	1,3747
rAT	0,5735
rCG	0,2337
rCT	3,8485
rGT	1,0000
pinv(I)	0,4019
alpha(G)	0,9353
pinv(IG)	0,3890
alpha(IG)	87,8244

Numbers have been rounded.

(I): considers only +I models.

(G): considers only +G models.

(IG): considers only +I+G models.