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| --- | --- | --- | --- |
| **Locus** | **Position** | **Best model (BIC)**  ***Bosminopsis* only** | **Best model (BIC)**  ***Bosminopsis* + outgroups** |
| COI | 1st | TNe{1.8573,14.8352}  +FQ | TIM3e{0.0001,1.1171,14.1711}  +FQ  +I{0.5705} |
| 2nd | TNe{1.8573,14.8352}  +FQ | K3Pu{33.76,100}  +F{0.0941,0.2602,0.1902,0.4554} |
| 3th | TNe{1.8573,14.8352}  +FQ | TPM3u{0.2111,5.6469}  +F{0.3029,0.1587,0.1199,0.4182}  +R2{0.57,0.26,0.42,1.97} |
| 16S |  | TVM{7.95,83.89,84.28,2.93}  F{0.3123,0.1436,0.2061,0.3379} +R2{0.83,0.17,0.16,5.25} | TVM{0.72,6.01,5.05,0.33}  F{0.3081,0.1471,0.2061,0.3388} +G4{0.3868} |
| 18S |  | JC  +I{0.8431} | K2P{2.2143}  +FQ  +R2{0.88,0.28,0.11,6.27} |
| 28S |  | K2P{6.9781}  +FQ  +I{0.7354} | TNe{3.7143,12.5595}  +FQ  +G4{0.1927} |

Base substitution rates: JC – Jukes-Cantor model [1] equal base frequencies, all substitutions equally likely; K2P – Kimura 2-parameter model [2] equal base frequencies, one transition rate and one transversion rate; TNe – Tamura-Nei model [3] equal base frequencies, equal transversion rates, variable transition rates; K3Pu – Kimura 3-parameter model [4] unequal base frequencies, equal transition rates, two transversion rates; TIM3e – transversion model with equal base frequencies and AC=CG, AT=GT; TPM3u – three parameter model with unequal base frequencies and AC=CG, AG=CT, AT=GT; TVM – transversion model with variable base frequencies, variable transversion rates, transition rates equal. Base frequencies: +F – empirical base frequencies; +FQ – equal base frequencies. Rate heterogeneity across sites: +I – proportion of invariable sites; +G4 – discrete Gamma model [5] with four categories; +R – FreeRate model [6] that generalizes the +G model by relaxing the assumption of Gamma-distributed rates. Non-standard model parameters are indicated in {}.

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