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Phylogenetic inference of the family Alariaceae (Phaeophyta)
based on Rubisco spacer and ITS sequences

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To infer molecular phylogenetic relationships of the family Alariaceae, RuBisCo spacer sequences of plastid DNA were analyzed for seventeen taxa of the Alariaceae and for five reference species. The nuclear ITS sequences were added with the published data. The taxonomic species were consistently grouped together into its own category in both RuBisCo spacer and ITS data set. The RuBisCo spacer sequence showed that the Alariaceae forms two clades: one comprised Alaria, Pterygophora and Undaria while the other formed Ecklonia, Eckloniopsis, Eisenia and Egregia. Trees based on ITS sequences showed a similar topology with that of RuBisCo spacer. These results favor the narrow concept of the Alariaceae, in which Alaria, Pterygophora and Undaria only should be placed. Ecklonia, Eckloniopsis, Eisenia and Egregia appear not to have a common ancestor with the members of the Alariaceae sensu stricto.

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Molecular phylogeny of the genus Euglena
(Euglenophyceae) tested by 18S rDNA sequences

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We analyzed the phylogenetic relationships among the four subgenus of Euglena, Rigidae, Caltilliferae, Radiatae, and Serpentes, by 18S rDNA sequence comparison to test some phylogenetic hypotheses that had been proposed for this genus. The complete coding regions of seven species and ten taxa of the related were determined and compared to the database and the literature. The subgenus Rigidae was separated into different clades, that appears to reflect morphological differences between E. acus and E. oxvuris. The subgenus Serpentes, represented as E. mutabilis, was most basal to all assemblages of Euglena species including other related genera. Our 18S rDNA sequences data show that the genus Euglena may be not monophyletic but polyphyletic. 18S rDNA trees show the similar grouping with those based on metaboly, but not on chloroplast morphology. We suggest that Euglena known as one of the largest genus with 150 species is a morphological group including phylogenetically different taxa.