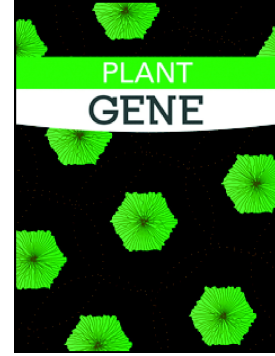


Accepted Manuscript

18S rDNA sequence-structure phylogeny of the Chlorophyceae with special emphasis on the Sphaeropleales

Mark A. Buchheim, Tobias Müller, Matthias Wolf



PII: S2352-4073(17)30022-7
DOI: doi: [10.1016/j.plgene.2017.05.005](https://doi.org/10.1016/j.plgene.2017.05.005)
Reference: PLGENE 99
To appear in: *Plant Gene*
Received date: 10 April 2017
Revised date: 12 May 2017
Accepted date: 13 May 2017

Please cite this article as: Mark A. Buchheim, Tobias Müller, Matthias Wolf , 18S rDNA sequence-structure phylogeny of the Chlorophyceae with special emphasis on the Sphaeropleales, *Plant Gene* (2017), doi: [10.1016/j.plgene.2017.05.005](https://doi.org/10.1016/j.plgene.2017.05.005)

This is a PDF file of an unedited manuscript that has been accepted for publication. As a service to our customers we are providing this early version of the manuscript. The manuscript will undergo copyediting, typesetting, and review of the resulting proof before it is published in its final form. Please note that during the production process errors may be discovered which could affect the content, and all legal disclaimers that apply to the journal pertain.

18S rDNA sequence-structure phylogeny of the Chlorophyceae with special emphasis on the Sphaeropleales

Mark A. Buchheim ¹, Tobias Müller ², Matthias Wolf ²

¹ Department of Biological Science, the University of Tulsa, 800 South Tucker Drive, Tulsa, OK 74104, USA

² Department of Bioinformatics, Biocenter, University of Würzburg, Würzburg, Germany

Abstract: Using THESES db, the algae 18S rDNA sequence-structure database for inferring phylogenies, we reconstructed the phylogeny of a comprehensive sampling of sphaeroplealean green algae evaluated in the context of chlorophycean diversity. A review of the most recent assessments of chlorophycean phylogeny using sequence-only analyses further illustrates the contrast with results obtained from chlorophycean 18S rDNA sequence-structure analysis to the current literature on chlorophycean phylogenomics. With only the phylogenetic position of *Golenkinia* and the *Cylindrocapsa*-clade as exceptions, a maximum likelihood tree of 18S rDNA sequence-structure data is robustly supported and is almost fully congruent with the tree topology obtained by the most recent phylogenomic approaches. Remarkably, even a quick and easy neighbor-joining analysis yields accurate results and enables one to reconstruct and discuss the big picture for all three hundred sphaeroplealean 18S rDNA sequence-structure pairs currently available. These results are testament to the ease, utility and power of a sequence-structure approach to analyzing 18S rDNA data.

Keywords: algae; Chlorophyta; RNA; secondary structure; phylogeny.

Download English Version:

<https://daneshyari.com/en/article/5590952>

Download Persian Version:

<https://daneshyari.com/article/5590952>

[Daneshyari.com](https://daneshyari.com)