Morphology, Genome Plasticity, and Phylogeny in the Genus Ostreococcus Reveal a Cryptic Species, O. mediterraneus sp. nov. (Mamiellales, Mamiellophyceae)

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Résumé en anglais	Coastal marine waters in many regions worldwide support abundant populations of extremely small (1-3 µm diameter) unicellular eukaryotic green algae, dominant taxa including several species in the class Mamiellophyceae. Their diminutive size conceals surprising levels of genetic diversity and defies classical species' descriptions. We present a detailed analysis within the genus Ostreococcus and show that morphological characteristics cannot be used to describe diversity within this group. Karyotypic analyses of the best-characterized species O. tauri show it to carry two chromosomes that vary in size between individual clonal lines, probably an evolutionarily ancient feature that emerged before species' divergences within the Mamiellales. By using a culturing technique specifically adapted to members of the genus Ostreococcus, we purified >30 clonal lines of a new species, Ostreococcus mediterraneus sp. nov., previously known as Ostreococcus clade D, that has been overlooked in several studies based on PCR-amplification of genetic markers from environment-extracted DNA. Phylogenetic analyses of the S-adenosylmethionine synthetase gene, and of the complete small subunit ribosomal RNA gene, including detailed comparisons of predicted ITS2 (internal transcribed spacer 2) secondary structures, clearly support that this is a separate species. In addition, karyotypic analyses reveal that the chromosomal location of its ribosomal RNA gene cluster differs from other Ostreococcus clades.
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