EVOLUTION OF PRIMARY PRODUCERS IN THE SEA

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Preface

In most contemporary texts on biological oceanography, the basic evolutionary history of the organisms is ignored. Hence, while most students in the field are well aware of the existence of, for example, diatoms and dinoflagellates, they have little understanding of when the various taxa arose, how they are related, and their impact on the biogeochemical cycles on Earth over geological time.

The idea to begin a systematic, integrated study of the evolution of primary producers in the ocean originated at a meeting held in 1999 on the shore of Lake Balaton, Hungary. It subsequently evolved into a formal collaborative research program, supported largely by the National Science Foundation. Not all the authors for these chapters participated in that program, but all were consulted and invited to workshops over the years. The volume is structured to follow the evolutionary history of marine photosynthetic organisms from the Archean to the present. While each chapter is self-contained, they are interrelated and reflect the complexity of the subject, spanning organic and isotopic geochemistry, molecular phylogeny, micropaleontology, cell physiology, and paleoecology. We believe the volume summarizes our knowledge of the overall topic of the evolution of marine photoautotrophs at this time; clearly more detailed understanding will emerge as whole genome analyses become more widely available, and as progress is made in geochemistry and structural biology.

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Paul G. Falkowski and Andrew H. Knoll