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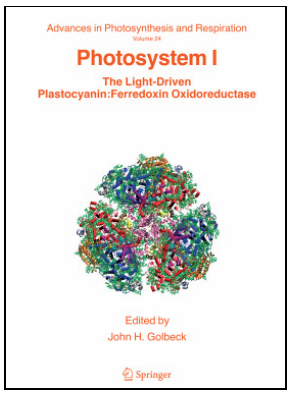

John H. Golbeck, The Pennsylvania State University, USA (Ed.)

Photosystem I

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This book summarizes the advances made in the last decade in the biophysics, biochemistry, and molecular biology of the light-driven plastocyanin:ferredoxin oxidoreductase known as Photosystem I. This reaction center participates along with Photosystem II in harvesting solar energy to supply photosynthetic organisms with stored chemical energy in the form of ATP and stored reducing power in the form of NADPH for processes such as metabolism, growth, and reproduction. This volume is a unique compilation of 40 chapters by leading researchers; it contains information on molecular architecture, protein-pigment interactions, excitation and electron transfer dynamics, protein-cofactor interactions, kinetics of electron transfer and bioassembly of proteins and cofactors. It begins with a series of historical perspectives that provide a solid background to the field, and ends with information on modeling of light-harvesting and electron transfer reactions, and the evolution of the reaction center. Particular attention is paid to spectroscopy, including the theory of the measurement and the interpretation of the data. The book is intended to be a comprehensive and up-to-date source of background information on Photosystem I for seasoned researchers, those who are just entering the field, Ph.D. students, researchers and advanced undergraduates in the fields of biophysics, biochemistry, microbiology, agriculture, and ecology. Industrial scientists, interested in solar energy conversion, will also find the book useful.

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