

Table of Contents

CONTRIBUTORS TO VOLUME 297.	ix
PREFACE.	xiii
VOLUMES IN SERIES	xv

Section I. Genetic Approaches to Dissect Complex Functions

1. Transposon Mutagenesis of Heterocyst-Forming Filamentous Cyanobacteria	MICHAEL F. COHEN, JOHN C. MEEKS, YUPING A. CAI, AND C. PETER WOLK	3
2. Isolation and Genetic Characterization of Pseudo-revertants from Site-Directed PSI Mutants in <i>Synechocystis</i> 6803	JIANPING YU AND LEE MCINTOSH	18
3. High-Frequency Transformation of <i>Chlamydomonas reinhardtii</i>	KAREN L. KINDLE	27
4. Approaches to Investigating Nuclear Genes That Function in Chloroplast Biogenesis in Land Plants	ALICE BARKAN	38
5. Obtaining Crystal Structures from Bacterial Photosynthetic Reaction Centers	GÜNTER FRITZSCH	57

Section II. Photosynthetic Complexes: Function/Structure

6. Using Genetics to Explore Cytochrome Function and Structure in <i>Rhodobacter</i>	HANS-GEORG KOCH, HANNU MYLLYKALLIO, AND FEVZI DALDAL	81
7. Comparison of <i>in Vitro</i> and <i>in Vivo</i> Mutants of Photosystem I: Protocols for Mutagenesis and Techniques for Analysis	JOHN H. GOLBECK	95
8. Isolation and Functional Study of Photosystem I Subunits in the Cyanobacterium <i>Synechocystis</i> sp. PCC 6803	JUN SUN, AN KE, PING JIN, VAISHALI P. CHITNIS, AND PARAG R. CHITNIS	124
9. Delineation of Critical Regions of the ϵ Subunit of Chloroplast ATP Synthase through a Combination of Biochemical and Site-Directed Mutagenesis Approaches	RICHARD E. MCCARTY AND JEFFREY A. CRUZ	139

Section III. Gene Expression of Photosynthetic Components

- | | | |
|--|---|-----|
| 10. Transcriptional Regulation of Photosynthesis Operons in <i>Rhodobacter sphaeroides</i> 2.4.1 | JILL H. ZEILSTRA-RYALLS,
MARK GOMELSKY,
ALEXEI A. YELISEEV,
JESUS M. ERASO, AND
SAMUEL KAPLAN | 151 |
| 11. Use of <i>Synechocystis</i> 6803 to Study Expression of a <i>psbA</i> Gene Family | CHRISTER JANSSON,
GAZA SALIH,
JAN ERIKSSON,
RONNEY WIKLUND, AND
HAILE GHEBRAMEDHIN | 166 |
| 12. Analysis of Light-Regulated Gene Expression | PAUL P. DIJKWEL,
FRED ROOK, AND
SJEFF C. M. SREEKENS | 182 |
| 13. Translational Regulation of Chloroplast Gene Expression in <i>Chlamydomonas reinhardtii</i> | AMYBETH COHEN,
CHRISTOPHER B. YOHN,
RICHARD K. BRUICK, AND
STEPHEN P. MAYFIELD | 192 |
| 14. Use of Antisense Mutants to Study Regulation of Photosynthesis during Leaf Development | STEVEN RODERMEL | 209 |
| 15. Assessing the Potential for Chloroplast Redox Regulation of Nuclear Gene Expression | DION G. DURNFORD,
ONDREJ PRASIL,
JEAN-MICHEL ESCOUBAS, AND
PAUL G. FALKOWSKI | 220 |

Section IV. Biogenesis and Adaptation of Photosynthetic Components

- | | | |
|---|---|-----|
| 16. Molecular and Genetic Analysis of Light-Dependent Chlorophyll Biosynthesis | GREGORY ARMSTRONG AND
KLAUS APEL | 237 |
| 17. Molecular Biology of Carotenoid Biosynthesis in Photosynthetic Organisms | MARK HARKER AND
JOSEPH HIRSCHBERG | 244 |
| 18. Copper-Responsive Gene Expression during Adaptation to Copper Deficiency | JEANETTE M. QUINN AND
SABEEHA MERCHANT | 263 |
| 19. Using Molecular Genetics to Investigate Complementary Chromatic Adaptations: Advances in Transformation and Complementation | DAVID M. KEHOE AND
ARTHUR R. GROSSMAN | 279 |

Section V. Photosynthetic Mutants: Construction and Biological/Biochemical/Biophysical Analyses

- | | | |
|--|-------------------|-----|
| 20. Gene Modification and Mutation Mapping to Study the Function of Photosystem II | WIM F. J. VERMAAS | 293 |
|--|-------------------|-----|

21. Specific Mutagenesis of Reaction Center Proteins by Chloroplast Transformation of <i>Chlamydomonas reinhardtii</i>	HYEONMOO LEE, SCOTT E. BINGHAM, AND ANDREW N. WEBBER	310
22. Directed Mutagenesis in Photosystem II: Analysis of the CP 47 Protein	TERRY M. BRICKER, CINDY PUTNAM-EVANS, AND JITUO WU	320
23. Application of Spectroscopic Techniques to the Study of Mutations Engineered in <i>Synechocystis</i> and <i>Chlamydomonas</i>	BRUCE A. DINER	337
AUTHOR INDEX		361
SUBJECT INDEX		381