CURRICULUM VITA

Charles F. Yocum
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Education: B.S. 1963 Iowa State University
M.S. 1968 Illinois Institute of Technology
Ph.D.1971 Indiana University

Professional Experience:

2010-Present: Alfred S. Sussman Distinguished University Professor of Cellular, Molecular, and Developmental Biology Emeritus; **2004-2010:** Alfred S. Sussman Distinguished University Professor of Cellular, Molecular, and Developmental Biology and Professor of Chemistry; **2004-Present:** Senior Fellow, Michigan Society of Fellows; **1998-2004**: Alfred S. Sussman Collegiate Professor of Biology and Professor of Chemistry; **1983-1998**: Professor of Biology and Chemistry; **1985-1991**: Chair, Department of Biology; **1973-1983**: Assistant, Associate Professor of Biology and Chemistry, University of Michigan; **1971-1973:** NIH Postdoctoral fellow, Cornell University, (with Ephraim Racker); **1968-1971:** Graduate fellow, Indiana University, (with Anthony San Pietro); **1963-1968:** Research Biochemist, IIT Research Institute

Honors and Awards:

2004: Distinguished University Professorship; Senior Fellow, Michigan Society of Fellows; **2002-2003:** Fellow of the John Simon Guggenheim Foundation; **2001:** Elected Fellow, American Association for the Advancement of Science; **1999:** Margaret and Herman Sokol Faculty Award in the Sciences, University of Michigan; **1998:** Collegiate Professorship, University of Michigan; **1996:** Chair, Gordon Research Conference on Biochemical Aspects of Photosynthesis; **1996:** Senior Fulbright Scholar, Leiden University, The Netherlands; **1995:** Distinguished Faculty Achievement Award, University of Michigan; **1992:** Visiting Professor, Biophysics Department, Huygens Laboratory, Leiden University; **1980-1981:** Visiting Professor of Chemistry, Michigan State University, **1978:** The University of Michigan Henry Russel Award for distinguished research and teaching; **1971-1973:** NIH postdoctoral fellowship; **1971-1972:** NSF postdoctoral fellowship (declined).

Participation in Meetings:

2008: Katzir Symposium, Tel Aviv University, “The unbearable complexity of life” (Invited Speaker); **2006:** Gordon Research Conference on Physical/Chemical Aspects of Photosynthesis (Session Chair); **2004:** Midwest Photosynthesis Meeting (Co-Organizer); **2003:** W.E. Hereaus Symposium, Bad Honnef, Germany (Invited Speaker); **2002:** Gordon Research Conference on Biochemical Aspects of Photosynthesis (Discussion Leader); **2001:** “Electron transfer in photosynthesis”, Couran Cove Resort, Brisbane Australia (Invited Speaker); “Gerald T. Babcock Memorial Symposium”,

Michigan State University (Invited Speaker); Johnson Research Foundation Symposium, "40 years of tunneling/hydrogen atom transfer/proton coupled electron transfer in Biology (Session Chair); **2000:** Gordon Research Conference on Physical/Chemical Aspects of Photosynthesis (Invited Participant); **1999:** Western Regional Photosynthesis Meeting (invited speaker); **1998:** International Photosynthesis Congress, Budapest, Hungary (symposium speaker); **1997:** Gordon Research Conference, Physical/Chemical Aspects of Photosynthesis (participant); **1996:** Gordon Research Conference, Biochemistry of Photosynthesis (Organizer and Chair); **1996:** Annual Meeting, American Society for Photobiology (Invited Speaker).

Current Research Support:

NSF/DMB-"Function of PsbO, the Photosystem II Manganese Stabilizing Protein", $460,000, 2007-2012; BARD-"Structure and Function of Photosynthetic Reaction Centers" $122,000, 2009-2012.

Professional Societies:

American Association for the Advancement of Science; American Chemical Society; American Society of Biological Chemists and Molecular Biologists; American Society of Plant Biologists; American Society for Photobiology; Biophysical Society; International Society for Photosynthesis Research

Service at the University of Michigan

1975: Biophysics Review Committee (Secretary); **1974-1975:** Botany Executive Committee; **1975:** Committee to Establish the Rules of Governance of the Division of Biological Sciences; **1976-1978:** Executive Committee, Division of Biological Sciences; **1978-1980:** Leader, Cell and Molecular Biology Subunit, Division of Biological Sciences; **1981-1983:** Associate Chair, Space and Facilities, Division of Biological Sciences; **1985-1991:** Chair, Division of Biological Sciences, then Department of Biology; **1986-1988:** Member, Executive Committee, Institute of Science and Technology; **1988-2003:** Member, Executive Committee of the Phoenix Memorial Project; **1999-2002:** Member, LS&A Executive Committee;

Professional Service

Member, Editorial Boards:

Plant Physiology (Senior Associate Editor, Membranes and Bioenergetics, 1989; Bioenergetics and Photosynthesis, 1992-1998)
Biochimica et Biophysica Acta-Bioenergetics (1989-1997)
Photosynthesis Research (1987-1995)
Journal of Biological Chemistry (2006-2011)

Ad hoc reviewer of manuscripts for:

Biochemistry
Biochimica et Biophysica Acta-Bioenergetics
FEBS Letters
Inorganic Chemistry

Journal of Biological Chemistry
Journal of the American Chemical Society
Journal of Physical Chemistry
Plant Physiology
Plant Science Letters
Photochemistry and Photobiology
Photosynthesis Research
Proceedings of the National Academy of Sciences

Membership on Federal/International Panels and Committees:

Member, NSF advisory panels on: Metabolic Biology (1982-1985); Chemistry of Life Processes (1986); Research Experience for Undergraduates (1988); Plant Science Centers (1988-1990); Research Training Grants (1992, 1994); Molecular Biochemistry (1994-2001; 2008)

Member, NSF oversight panel, Division of Cellular Biosciences (1988); NSF Committee of Visitors, Cellular Biochemistry Program, (1991); USDA panel on Photosynthesis (1989)

Chair, DOE/OPA Panel on Basic Studies of Photosynthesis (1993) and NSF oversight panel for Division of Biological Instrumentation and Human Resources (1995)

Member, Weizmann Institute Willstatter Center Review Committee, at the invitation of the Max-Planck Gesellschaft (1994)

Ad hoc reviewer of proposals from: NSF, DOE, USDA/NRICGP, SERC (Great Britain) and NWO (Netherlands)

Doctoral Students Trained:

James A. Guikema (1977) Associate Vice President for Research and Associate Dean of the Graduate School,Professor of Biology, Kansas State University

Walter R. Taylor (1978) Computer Consultant, San Francisco

Howard Robinson (1980) Senior Scientist, Brookhaven National Laboratories

Steven Robinson (1980) White House Domestic Policy Council

Cathy Selvius DeRoo (1983) Scientific Curator, Detroit Institute of the Arts

Jon P. Hosler (1983) Professor, University of Mississippi School of Medicine

David B. Hicks (1984) Associate Professor, Mount Sinai Medical School

Peter Sandusky (1985) Faculty, Eckerd College

Charlene Waggoner (1989) President, Greenway Network, Inc.

Neil R. Bowlby (1989) Senior Lecturer, Michigan State University

Rui Mei (1992) Vice President for Research, Centrillion Biosciences

Sunyoung Kim (1994) Associate Professor, Louisiana State University, New Orleans

Scott Betts (1995) Research Director, Benson Hill Biosciences

Pamela DeMarois (1999) Lawyer, Wilmington, DE

Eileen Yu (Co-Chair with J.E. Penner-Hahn) (1999)

Robert McCarrick (2005) EPR Spectroscopist, Miami University

Aaron Wyman (2004) Assistant Professor, Aurora University

Thomas Kuntzleman (2005) Assistant Professor of Chemistry, Spring Arbor University

Post-doctorals Trained:

Dr. Demetrios Ghanotakis (1984-1987)
Professor of Chemistry
University of Crete
Iraklion, Crete, Greece

Dr. Jan P. Dekker (1987-1989)
Associate Professor of Biophysics
Free University of Amsterdam

Dr. Peter O. Sandusky (1990-1993)
Faculty Member, Eckerd University
St. Petersburg, FL

Dr. Nikos Lydakis-Simantiris (1996-1999)
Professor
Technology Education Institute of Crete
Research Scientist, AICH
Chania, Crete, Greece

Dr. Hana Popelkova (2000-2003; 2005-2012) Investigator, Life Sciences Institute

Courses Taught:

Biology 152 (Introductory Biology)

Biology 209 (Plant Physiology)

Biology 415 (Cell and Molecular Biology)

MCDB 430 (Plant Molecular Biology)

Biology 518 (Bioenergetics)

Biology 614 (Photobiology)

MCDB 615 (Cell/Molecular Biology)

Chemistry 130 (Introductory Chemistry)

Chemistry 302 (Inorganic Chemistry)

Chemistry 451 (Biochemistry I)

Chemistry 526 (Chemical Biology II)

Chemistry 711 (Topics in Bioinorganic Chemistry)

Cellular Biotechnology 503 (Cellular Biotechnology)

Publications

1. Sumyk, G. B., and C. F. Yocum, "Gel Filtration Behavior of Heparin and N-Desulfated Heparin", *J. Chromatog.* 35, 101-104 (1968).

2. Sumyk, G. B., and C. F. Yocum, "Failure of Type A Botulinum Toxin to Inhibit Acetylcholinesterase", *J. Bact.* 95, 1970-1971 (1969).

3. Yocum, C. F., J. L. Kyle, and J. A. Gross, "Isolation and Partial Characterization of Chloroplast Subunits", *Proc. 1st Int'l Cong. Photosynthesis Research*, pp. 122-127 (1969).

4. Yocum, C. F., and A. San Pietro, "Ferredoxin Reducing Substance (FRS) from Spinach", *Biochem. Biophys. Res. Comm.* 36, 614-620 (1969).

5. Yocum, C. F., and A. San Pietro, "Ferredoxin Reducing Substance (FRS) from Spinach. II. Separation and Assay", *Arch. Biochem. Biophys.* 140, 152-157 (1970).

6. Yocum, C. F., and A. San Pietro, "The Reducing Side of Photosystem I: The Role of Ferredoxin Reducing Substance (FRS)", *Proc. 2nd Int'l. Cong. Photosynthesis Research*, pp. 477-489 (1972).

7. Yocum, C. F., J. N. Siedow, and A. San Pietro, "Iron-Sulfur Proteins in Photosynthesis", In: *Iron Sulfur Proteins*, (W. Lovenberg, ed.), Academic Press, New York, pp. 111-127 (1973).

8. Siedow, J. N., C. F. Yocum, and A. San Pietro, "The Reducing Side of Photosystem I", In: *Current Topics in Bioenergetics,* (D. R. Sanadi, ed.), Academic Press, New York, pp. 107-123 (1973).

9. Yocum, C. F., "Pathways of Energy in Photosynthesis", *Food and Life Sciences Quarterly* (October-December), pp. 6-8 (1973).

10. Yocum, C. F., N. Nelson, and E. Racker, "A Procedure for the Combined Preparation of Ferredoxin, Plastocyanin, and CF_1", *Prep Biochem.* 5, 305-317 (1975).

11. Guikema, J. A., and C. F. Yocum, "The Mechanism of Quinonediimine Acceptor Activity in Photosynthetic Electron Transport", *Biochemistry* 15, 362-267 (1975).

12. Yocum, C. F., "Photosystem II-Mediated Cyclic Photophosphorylation", *Biochem. Biophys. Res. Comm.* 68, 828-835 (1976).

13. Yocum, C. F., and J. A. Guikema, "Photophosphorylation Associated with Photosystem II. II. Photosystem II Cyclic Photophosphorylation Catalyzed by p-Phenylenediamine, *Plant Physiology* 59, 33-37 (1977).

14. Robinson, S. J., C. F. Yocum, H. Ikuma, and F. Hayashi, "Inhibition of Photosynthetic Electron Transport and Photophosphorylation by Diallate and Trifluralin", *Plant Physiology* 60, 840-844 (1977).

15. Yocum, C. F., "Photophosphorylation Associated with PS II. II. Effects of Catalyst Oxidation, Electron Donation and Electron Transport Inhibition of PS II Cyclic Photophosphorylation", *Plant Physiology* 60, 592-596 (1977).

16. Yocum, C. F., "Photophosphorylation Associated with PS II. III. Characterization of Proton Uptake, Uncoupling, and Energy Transfer Inhibition Reactions Associated with PS II Cyclic Photophosphorylation", *Plant Physiology* 60, 597-601 (1977).

17. Ikuma, H., C. F. Yocum, and R. J. Lowry, "Rapid Biochemical Technique for Phytotoxicity. Modes of Action of Herbicides." Part I (208 pp.); Part II (125 pp.); USEPA/Government Printing Office (1978).

18. Guikema, J. A., and C. F. Yocum, "Evidence for Two Sites of Inhibition of Photosynthetic Electron Transport by Dibromothymoquinone", *Arch. Biochem. Biophys.* 189, 508-515 (1978).

19. Robinson, H. H., and C. F. Yocum, "Photochemical Generation of Reduced Quinone Catalysts of Photosystem I Cyclic Photophosphorylation Activity", *Photochem. Photobiol.* 29, 135-140 (1979).

20. Owers-Nahri, L., S. J. Robinson, C. L. Selvius DeRoo, and C. F. Yocum, "Reconstitution of Cyanobacterial Photophosphorylation by a Latent Ca^{2+} ATPase", *Biochem. Biophys. Res. Commun.* 90, 1025-1031 (1979).

21. Guikema, J. A., and C. F. Yocum, "Steady-State Kinetic Analyses of Photosystem II Activity Catalyzed by Lipophilic Electron Acceptors", *Biochim. Biophys. Acta* 547, 241-251 (1979).

22. Robinson, H. H., and C. F. Yocum, "Cyclic Photophosphorylation Reactions Catalyzed by Ferredoxin, Methylviologen and Anthraquinone Sulfonate: Use of Photochemical Reactions to Optimize Redox Poising", *Biochim. Biophys. Acta* 590, 97-106 (1980).

23. Robinson, H. H., R. R. Sharp, and C. F. Yocum, "Effect of Manganese on the Nuclear Magnetic Relaxivity of Water Protons in Chloroplast Suspensions", *Biochem. Biophys. Res. Commun.* 93, 755-761 (1980).

24. Yocum, C. F., "Measurement of Photophosphorylation Associated with Photosystem II", in Methods in Enzymology, (A. San Pietro, ed.), Academic Press, New York, pp. 576-584 (1980).

25. Sharp, R. R., and C. F. Yocum, "The Kinetics of Water Exchange Across the Chloroplast Membrane", *Biochim. Biophys. Acta* 592, 169-184 (1980).

26. Sharp, R. R., and C. F. Yocum, "Field-dispersion Profiles of the Proton Spin-lattice Relaxation Rate in Chloroplast Suspensions: Effect of Manganese Extraction by EDTA, Tris and NH_2OH", *Biochim. Biophys. Acta* 592, 185-195 (1980).

27. Robinson, H. H., J. A. Guikema, and C. F. Yocum, "Reversal of DBMIB Inhibition of Photosynthetic Electron Transport by Bovine Serum Albumin", *Arch. Biochem. Biophys.* 203, 681-690 (1980).

28. Robinson, H. H., R. R. Sharp, and C. F. Yocum, "NMR Relaxivity Changes in Chloroplast Suspensions: Effects of NH_2OH and of Treatments Altering the Redox State of the Photosynthetic Electron Transport Chain", *Biochim. Biophys. Acta* 593, 414-426 (1980).

29. Sharp, R. R., and C. F. Yocum, "Factors Influencing NH_2OH Inactivation of Photosynthetic Oxygen Evolution", *Biochim. Biophys. Acta* 635, 90-104 (1981).

30. Robinson, H. H., R. R. Sharp, and C. F. Yocum, "On the Origin of Light-induced Changes in the Proton Magnetic Relaxation Rate of Chloroplast Thylakoid Membrane Suspensions", *Arch Biochem. Biophys.* 207, 1-8 (1981).

31. Guikema, J. A. and C. F. Yocum, "Kinetic Analyses of PS II Cyclic Phosphorylation Activity: Evidence for Two Cyclic Reactions", *Pl. Physiol.* 67, 887-891 (1981).

32. DeRoo, C. L. and C. F. Yocum, "Cation-induced, Inhibitor Resistant Photosystem II Reactions in Cyanobacterial Membranes", *Biochem. Biophys. Res. Commun.* 100, 1025-1031 (1981).

33. Robinson, H. H., R. R. Sharp, and C. F. Yocum, "Topology of NH_2OH-induced Mn(II) Released from Chloroplast Thylakoid Membranes" *Biochim. Biophys. Acta*, 636, 144-152 (1981).

34. Robinson, H. H., R. R. Sharp, and C. F. Yocum, "Topology of Manganese Release upon Inactivation of the Oxygen-evolving Complex: An NMR Study", In *Proc. 5th Int'l Congress on Photosynthesis*, (G. Papageorgiou et al., eds.), Int. Science Publishers, Jerusalem, pp. 505-514 (1981).

35. Robinson, H. H. and C. F. Yocum, "Reversal of DBMIB Inhibition of Photosynthetic Electron Transport by Bovine Serum Albumin: Regulation of the Protein- inhibitor Interaction by Membrane Surface Charge", In *Proc. 5th Int'l Congress on Photosynthesis*, (G. Papageorgiou et al., eds.), Int. Science Publishers, Jerusalem, pp.317-326 (1981).

36. Yocum, C. F. and G. T. Babcock, "Amine-induced Inhibition of Photosynthetic Oxygen Evolution: A Correlation between the Microwave Power Saturation Properties of Signal IIf and PSII-associated Manganese", *FEBS Lett.* 130, 99-102 (1981).

37. Yocum, C. F. and J. P. Hosler, "Cyclic Electron Transfer Coupled to Phosphorylation", in Energy Coupling in Photosynthesis, (B. Selman, ed.), Elsevier, Amsterdam, 35-45 (1981).

38. Berthold, D. A., G. T. Babcock and C. F. Yocum, "A Highly Resolved Oxygen-Evolving Photosystem II Preparation from Spinach Thylakoid Membranes: EPR and Electron Transport Properties", *FEBS Lett.* 134, 231-234 (1981).

39. Yocum, C. F., C. T. Yerkes, R. E. Blankenship, R. R. Sharp and G. T. Babcock, "Stoichiometry, Inhibitor Sensitivity, and Organization of Manganese Associated with Photosynthetic Oxygen Evolution", *Proc. Natl. Acad. Sci. USA* 78, 7507-7511 (1981).

40. Yocum, C. F., "Purification of Ferredoxin and Plastocyanin", In *Methods in Chloroplast Molecular Biology* (Chua, Hallick, Edelman, eds.), Elsevier, Amsterdam, 973-981 (1982).

41. Robinson, S. J., C. L. Selvius DeRoo and C. F. Yocum, "Electron Transport Activities in Preparations of the Cyanobacterium *Spirulina platensis*", *Plant Physiol*., 70, 154-161 (1982).

42. Sharp, R. R. and C. F. Yocum, "Nuclear Magnetic Relaxivity of Chloroplast Thylakoid Membranes: Response to Saturating Light Flashes" *Photobiochem. Photobiophys*. 5, 193-199 (1983).

43. Ghanotakis, D. F., P. J. O'Malley, G. T. Babcock and C.F. Yocum, "Structure and Inhibition of Components on the Oxidizing Side of Photosystem II", In *The Oxygen Evolving System of Photosynthesis*, Academic Press, (Y. Inoue, et al., eds.), Tokyo, pp. 87-98 (1983).

44. Sandusky, P. O., C. L. Selvius DeRoo, D. B. Hicks, C. F. Yocum, D. F. Ghanotakis and G. T. Babcock, "Electron Transfer Activity and Polypeptide Composition of the Isolated Photosystem II Complex." In *The Oxygen Evolving System of Photosynthesis*, Academic Press, (Y. Inoue, et al., eds.), Tokyo, pp. 183-194 (1983).

45. Sandusky, P. O. and C. F. Yocum, "The Mechanism of Amine Inhibition of the Oxygen Evolving Complex: Amines Displace Chloride from a Binding Site on Manganese, *FEBS Lett.* 162, 339-343 (1983).

46. Yocum, C. F. "Oxygen Evolution: An Overview", In *Advances in Photosynthesis Research* (C. Sybesma, ed.), N.W. Junk Publishers, Amsterdam, Vol. 1., 239-242 (1984).

47. Hicks, D. B. and C. F. Yocum, "The Coupling Factor from the Cyanobacterium Spirulina platensis", In *Advances in Photosynthesis Research* (C. Sybesma, ed.), N.W. Junk Publishers, Amsterdam, Vol. II, 599-602.

48. Hosler, J. P. and C. F. Yocum, "Evidence for Two Phosphorylating Cycles Associated with Photosystem I", In *Advances in Photosynthesis Research* (C. Sybesma, ed.), N.W. Junk Publishers, Amsterdam, Vol. II, 415-418.

49. Yocum, C. F., P. O. Sandusky, D. F. Ghanotakis, and G. T. Babcock, "Factors Regulating Inactivation and Reconstitution of Oxygen Evolution Activity in Photosystem II Membrane Preparations", In *Advances in Photosynthesis Research* (C. Sybesma, ed.), N.W. Junk Publishers, Amsterdam, Vol. I, 341-344.

50. Ghanotakis, D. F., G. T. Babcock, and C. F. Yocum, "Inhibitory Treatments of Oxygen Evolution and Their Effects on Manganese Content, $Z^{\cdot+}$ Behavior, and Polypeptide Composition in Photosystem II Membranes", In *Advances in Photosynthesis Research* (C. Sybesma, ed.), N.W. Junk Publishers, Amsterdam, Vol. I, 279-282.

51. Babcock, G. T., D. F. Ghanotakis, C. T. Yerkes, W. Buttner, P. J. O'Malley and C. F. Yocum, "Electron Transfer Reactions on the Oxidizing Side of Photosystem II", In *Advances in Photosynthesis Research* (C. Sybesma, ed.), N.W. Junk Publishers, Amsterdam, Vol. I, 243-252.

52. Ghanotakis, D. F., Babcock, G. T. and C. F. Yocum. "Calcium reconstitutes high rates of oxygen evolution in polypeptide-depleted photosystem II preparations", *FEBS Lett.* 167, 127-130 (1984).

53. Ghanotakis, D. F., Topper, J. N., Babcock, G. T. and C. F. Yocum, "Water-soluble 17 and 23 kDa polypeptides restore oxygen evolution activity by creating a high-affinity binding sites for Ca^{2+} on the oxidizing side of photosystem II", *FEBS Lett.* 170, 169-173 (1984).

54. Ghanotakis, D. F., Babcock, G. T. and C. F. Yocum. "Structural and catalytic properties of the oxygen-evolving complex: Correlation of polypeptide and manganese release with the behavior of $Z^{\cdot+}$ in chloroplasts and a highly resolved preparation of the PSII complex", *Biochim. Biophys. Acta* 765, 388-398 (1984).

55. Sandusky, P. O. and C. F. Yocum, "The chloride requirement for photosynthetic oxygen evolution: Analysis of the effects of chloride and other anions on amine inhibition of the oxygen-evolving complex", *Biochim. Biophys. Acta* 766, 603-611 (1984).

56. Yocum, C. F., Ghanotakis, D. F., Sandusky, P. O., Topper, J. N. and G. T. Babcock, "The oxygen evolving complex of photosystem II: Polypeptide structure and organization of catalytic components", In: *Current Topics in Plant Biochemistry and Physiology* (D. D. Randall, et al., eds.) University of Missouri, Columbia, Mo., pp. 51-60 (1984).

57. Ghanotakis, D. F., Topper, J. N., and C. F. Yocum, "Structural organization of the oxidizing side of photosystem II: Exogenous reductants reduce and destroy the Mn-complex of PSII membranes depleted of the 17 and 23 kDa polypeptides" *Biochim. Biophys, Acta.* 767, 524-531 (1984).

58. Hosler, J. P. and C. F. Yocum, "Heparin inhibition of ferredoxin-NADP reductase in chloroplast thylakoid membranes", *Arch. Biochem. Biophys.,* 236, 473-478 (1985).

59. Ghanotakis, D. F. and C. F. Yocum, "Polypeptides of photosystem II and their role in oxygen evolution", *Photosynthesis Research*, 7, 97-114 (1985).

60. Yocum, C. F., "Electron transfer on the oxidizing side of photosystem II: Components and mechanisms", In: *Encyclopedia of Plant Physiology (new series), Photosynthesis I*II (L. A. Staehelin and C. J. Arntzen, eds.). Springer-Verlag, Berlin, pp. 437-446 (1986).

61. Hosler, J. P. and C. F. Yocum, "Evidence for two cyclic photophosphorylation reactions concurrent with ferredoxin-catalyzed non-cyclic electron transport", *Biochim. Biophys. Acta* 808, 21-31 (1985).

62. Ghanotakis, D. F., G. T. Babcock and C. F. Yocum, "Structure of the oxygen-evolving complex of photosystem II: Calcium and lanthanum compete for sites on the oxidizing side of photosystem II which control the binding of water-soluble polypeptides and regulate the activity of the manganese complex", *Biochim. Biophys. Acta* 809, 173-180 (1985).

63. Ghanotakis, D. F., C. F. Yocum and G. T. Babcock, "On the role of water-soluble polypeptides (17, 23 kDa) calcium and chloride in photosynthetic oxygen evolution", *FEBS Lett.* 192, 1-3 (1985).

64. Ghanotakis, D. F. and C. F. Yocum, "Purification and properties of an oxygen-evolving reaction center complex from photosystem II membranes: A simple procedure utilizing a non-ionic detergent and elevated ionic strength", *FEBS Lett.* 197, 244-248 (1986).

65. Ghanotakis, D. F. and C. F. Yocum, "Characterization of a photosystem II reaction center complex isolated by exposure of PSII membranes to a non-ionic detergent and high concentrations of NaCl", *Photosynthesis Research* 10, 483-488 (1986).

66. Liveanu, V., C. F. Yocum and N. Nelson, "Polypeptides of the oxygen-evolving photosystem II complex: Immunological detection and biogenesis", *J. Biol. Chem.* 261, 5296-5300 (1986).

67. Sandusky, P. O. and C. F. Yocum, "The chloride requirement for photosynthetic oxygen evolution: Factors affecting nucleophilic displacement of chloride from the oxygen evolving complex", *Biochim. Biophys. Acta* 849, 85-93 (1986).

68. Hicks, D. B. and C. F. Yocum, "Properties of the coupling factor ATPase from *Spirulina platensis*. I. Electrophoretic characterization and reconstitution of photophosphorylation", *Arch. Biochem. Biophys*. 245, 220-229 (1986).

69. Hicks, D. B. and C. F. Yocum, "Properties of the coupling factor ATPase from *Spirulina platensis*. II. Activity of the purified and membrane-bound enzymes", *Arch. Biochem. Biophys*. 245, 230-236 (1986).

70. Ghanotakis, D. F., C. F. Yocum and G. T. Babcock, "ESR spectroscopy demonstrates that cytochrome b559 remains low potential in calcium- reactivated salt-washed PSII particles", *Photosynthesis Research* 9, 125-134 (1986).

71. Ghanotakis, D. G. and C. F. Yocum, "The role of water- soluble polypeptides and calcium in photosynthetic oxygen evolution" In: *Ion Interaction in Energy Transfer Biomembranes*, (G. C. Papageorgiou, J. Barber, and S. Papa, eds.), Plenum, New York, N.Y., pp. 291-301 (1986).

72. Hicks, D. B., N. Nelson and C. F. Yocum, "Cyanobacterial and chloroplast F1-ATPases: cross-reconstitution of photophosphorylation and subunit immunological relationships", *Biochim. Biophys. Acta* 851, 217-222 (1986).

73. Babcock, G. T., T. K. Chandrashekar, D. F. Ghanotakis, C. W. Hoganson, P. J. O'Malley, I. D. Rodriguez and C. F. Yocum, "Kinetics and structure on the high potential side of photosystem II", In: *Progress in Photosynthesis Research* (J. Biggins, ed.), Martinus Nijhoff Publishers, Dordrecht, pp. 463-469 (1987).

74. Ghanotakis, D. F., D. M. Demetriou, and C. F. Yocum, "Purification of an oxygen evolving photosystem II reaction center core preparation", In: *Progress in Photosynthesis Research* (J. Biggins, ed.), Martinus Nijhoff Publishers, Dordrecht, pp. 681-684 (1987).

75. Waggoner, C. M. and C. F. Yocum, "Selective depletion of water-soluble polypeptides associated with photosystem II", In: *Progress in Photosynthesis Research* (J. Biggins, ed.), Martinus Nijhoff Publishers, Dordrecht, pp. 685-688 (1987).

76. Merritt, S., P. Ernfors, D. F. Ghanotakis and C. F. Yocum, "Binding of the 17 and 23 kDa water-soluble polypeptides to a highly-resolved PSII reaction center complex", In: *Progress in Photosynthesis Research* (J. Biggins, ed.), Martinus Nijhoff Publishers, Dordrecht, pp. 689-692 (1987).

77. Ghanotakis, D. F., D. M. Demetriou, and C. F. Yocum, "Isolation and characterization of an oxygen-evolving photosystem II reaction center core preparation and a 28 kDa chla-binding protein", *Biochim. Biophys. Acta* 891, 15-21 (1987).

78. Hosler, J. P. and C. F. Yocum, "Regulation of cyclic photophosphorylation during ferredoxin-mediated electron transport: Effect of DCMU and the NADPH/NADP ratio", *Plant Physiol.* 83, 965-969 (1987).

79. Yocum, C. F., "Oxygen Evolution by Photosystem II: Polypeptide Structure", In: *Models in Plant Physiology and Biochemistry* (D. W. Newman and K. G. Wilson, eds.), CRC Press, Boca Raton, FL. Chapter 1 (1987).

80. Yocum, C. F., "Photophosphorylation Activity of Higher Plant Chloroplast Thylakoid Membranes", In: *Models in Plant Physiology and Biochemistry* (D. W. Newman and K. G. Wilson, eds.), CRC Press, Boca Raton, FL, Chapter 2 (1987).

81. Ghanotakis, D. F., C. M. Waggoner, N. R. Bowlby, D. M. Demetriou, G. T. Babcock and C. F. Yocum, "Comparative structural and catalytic properties of oxygen-evolving photosystem II preparations", *Photosynthesis Research* 14, 191-199 (1987).

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