CURRICULUM VITAE

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EDUCATION

B.S.	1964	University of California, Los Angeles	Major: Chemistry
M.S.	1966	University of California, Los Angeles	Major: Plant Science
Ph.D.	1970	University of California, Los Angeles	Major: Botany

Ph.D. Thesis: The Regulation of Chlorophyll Biosynthesis in *Chlorella*

PROFESSIONAL EXPERIENCE

1986 -	**Professor of Biology**, Division of Biology and Medicine, Brown University, Providence, Rhode Island 02912
1983 - 1986	**Associate Professor of Biology**, Brown University
1979 - 1983	**Assistant Professor of Biology**, Brown University
1978 - 1979	**Assistant Research Biochemist**, Department of Internal Medicine, University of California, Davis, California 95616
1977 - 1978	**Lecturer**, Department of Botany, University of California, Davis
1976 - 1977	**Assistant Professor**, The Rockefeller University, New York, New York 10021
1974 - 1976	**Postdoctoral Fellow**, The Rockefeller University
1973 - 1974	**Postdoctoral Research Biochemist**, Department of Plant Pathology, University of California, Davis
1972 - 1973	**Postdoctoral Research Botanist**, Department of Botany, University of California, Davis
1970 - 1972	**Research Associate**, Department of Biology, Brookhaven National Laboratory, Upton, New York 11973
concurrent	1976, **Guest Investigator**; 1975, **Associate Investigator**; 1974, **Junior Investigator**, Summer Research Program in Experimental Marine Botany, Marine Biological Laboratory, Woods Hole, Massachusetts 02543

PROFESSIONAL MEMBERSHIPS

American Association for the Advancement of Science
American Society for Biochemistry and Molecular Biology (Elected)
American Society of Microbiogists
American Society of Plant Bhysiologists
Sigma Xi

SERVICE TO PROFESSION

2004	**Co-organizer**, Northeast Section Annual Meeting, American Society of Plant Biologists, Brown University, Providence, Rhode Island
2002	**Guest Editor**, Special Issue of *Photosynthesis Research* on Tetrapyrrole Photoreceptors in Photosynthetic Organisms
2001 - 2003	**Panelist**, Metabolic Biochemistry Program, National Science Foundation
2001	**Chair**, International Conference on Tetrapyrrole Photoreceptors in Photosynthetic Organisms, Brown University, Providence, Rhode Island
2000 - 2002	**Council Member** (Conference-Elected), Gordon Research Conferences
1999 - 2001	**Panelist**, Metabolic Biochemistry Program, National Science Foundation
1999	**Vice Chair**, International Conference on Tetrapyrrole Photoreceptors in Photosynthetic Organisms, Castelvecchio Pascoli, Lucca, Italy
1998	**Panelist**, Photosynthesis /Respiration Panel, National Research Initiative Competitive Grants Program, USDA
1997	**Panelist**, Photosynthesis /Respiration Panel, National Research Initiative Competitive Grants Program, USDA
1996 - 1997	**Chair, Publications Committee and Member, Executive Committee**, American Society of Plant Physiologists
1996 - 1998	**Panelist**, Metabolic Biochemistry Program, National Science Foundation
1995	**Panelist**, Photosynthesis /Respiration Panel, National Research Initiative Competitive Grants Program, USDA
1994	**Participant**, FASEB Consensus Conference on Biological Research Funding for Fiscal 1995, Representing the American Society for Biochemistry and Molecular Biology
1994	**Panelist**, Photosynthesis /Respiration Panel, National Research Initiative Competitive Grants Program, USDA
1993	**Participant**, FASEB Consensus Conference on Biological Research Funding for Fiscal 1994, Representing the American Society for Biochemistry and Molecular Biology
1993 - 1997	**Member, Publications Committee**, American Society of Plant Physiologists
1991 - 1992	**Member, Junior Participant Selection Committee and Senior Participant,** 1992 U.S. - Russian Photosynthesis Workshop
1991	**Evaluation Panelist,** Cornell University Section of Plant Biology, for USDA/CSRS
1990 - 1991	**Member, Program Committee,** International Conference on The Pyrroles of Photosynthetic Organisms, University of California, Davis
1990 - 1991	**Panelist,** NSF Cellular Biosciences Subpanel for Faculty Awards for Women in Science and Engineering
1988 - 1990	**Chair**, Selection Committee, 1990 Charles F. Kettering Award in Photosynthesis, American Society of Plant Physiologists
1988 - 1990	**Chair**, Gordon Research Conference on the Chemistry and Biology of Pyrroles
1986 - 1988	**Vice-Chair**, Gordon Research Conference on the Chemistry and Biology of Pyrroles
1986 - 1998	**Member, Editorial Board**, *Archives of Biochemistry and Biophysics*
1985 - 1987	**Panelist**, NSF Metabolic Biology Program
1985	**Host**, Joint Quadrennial Meeting of American and Canadian Societies of Plant Physiologists, at Brown University
1984 - 1985	**Panelist**, NSF Metabolic Biology Program
1983 - 1984	**Panelist**, NSF Cell Biology Program
1983 - 1992	**Member, Editorial Board**, *Plant Physiology*
1977	**Co-Director**, Northeast Algal Symposium, Marine Biological Laboratory, Woods Hole, Massachusetts

PUBLICATIONS

Original Research Articles

1. Beale, S. I. (1970) The biosynthesis of δ-aminolevulinic acid in *Chlorella*. *Plant Physiol*. 45, 504-506.
2. Beale, S. I., and Appleman, D. (1971) Chlorophyll synthesis in *Chlorella*. Regulation by degree of light limitation of growth. *Plant Physiol*. 47, 230-235.
3. Beale, S. I. (1971) Studies on the biosynthesis and metabolism of δ-aminolevulinic acid in *Chlorella*. *Plant Physiol*. 48, 316-319.
4. Beale, S. I. (1971) A simple method for the synthesis of ferric ethylenediaminetetraacetate in a pure and stable form. *Plant Physiol*. 48, 228.
5. Beale, S. I., and Castelfranco, P. A. (1973) ^{14}C incorporation from exogenous compounds into δ-aminolevulinic acid by greening cucumber cotyledons. *Biochem. Biophys. Res. Commun*. 52, 143-149.
6. Beale, S. I., and Castelfranco, P. A. (1974) The biosynthesis of δ-aminolevulinic acid in higher plants. I. Accumulation of δ-aminolevulinic acid in greening plant tissues. *Plant Physiol*. 53, 291-296.
7. Beale, S. I., and Castelfranco, P. A. (1974) The biosynthesis of δ-aminolevulinic acid in higher plants. II. Formation of ^{14}C-δ-aminolevulinic acid from labeled precursors in greening plant tissues. *Plant Physiol*. 53, 297-303.
8. Castelfranco, P. A., Rich, P. M., and Beale, S. I. (1974) The abolition of the lag phase in greening cucumber cotyledons by exogenous δ-aminolevulinic acid. *Plant Physiol*. 53, 615-618.
9. Beale, S. I., Gough, S. P., and Granick, S. (1975) The biosynthesis of δ-aminolevulinic acid from the intact carbon skeleton of glutamic acid in greening barley. *Proc. Natl. Acad. Sci. USA* 72, 2719-2723.
10. Jurgenson, J. E., Beale, S. I., and Troxler, R. F. (1976) Biosynthesis of δ-aminolevulinic acid in a unicellular Rhodophyte, *Cyanidium caldarium*. *Biochem. Biophys. Res. Commun*. 69, 149-157.
11. Ramus, J., Beale, S. I., Mauzerall, D., and Howard, K. L. (1976) Changes in photosynthetic pigment concentration in seaweeds as a function of water depth. *Mar. Biol*. 27, 223-229.
12. Ramus, J., Beale, S. I., and Mauzerall, D. (1976) Correlation of changes in pigment content with photosynthetic capacity of seaweeds as a function of water depth. *Mar. Biol*. 37, 231-238.
13. Beale, S. I., Gold, M. H., and Granick, S. (1979) Chemical synthesis of 4,5-dioxovaleric acid and its nonenzymatic transamination to 5-aminolevulinic acid. *Phytochemistry* 18, 441-444.
14. Mishkind, M., Mauzerall, D., and Beale, S. I. (1979) Diurnal variation *in situ* of photosynthetic capacity in *Ulva* is caused by a dark reaction. *Plant Physiol*. 64, 896-899.
15. Beale, S. I., Foley, T., and Dzelzkalns, V. (1981) δ-Aminolevulinic acid synthase from *Euglena gracilis*. *Proc. Natl. Acad. Sci. USA* 78, 1666-1669.
16. Beale, S. I., and Foley, T. (1982) Induction of δ-aminolevulinic acid synthase and inhibition of heme synthesis in *Euglena gracilis* by *N*-methyl mesoporphyrin IX. *Plant Physiol*. 69, 1331-1333.
17. Dzelzkalns, V., Foley, T., and Beale, S. I. (1982) δ-Aminolevulinic acid synthase of *Euglena gracilis*: Physical and kinetic properties. *Arch. Biochem. Biophys*. 216, 196-203.
18. Foley, T., Dzelzkalns, V., and Beale, S. I. (1982) δ-Aminolevulinic acid synthase of *Euglena gracilis*: Regulation of activity. *Plant Physiol*. 70, 219-226.
19. Foley, T., and Beale, S. I. (1982) δ-Aminolevulinic acid formation from γ,δ-dioxovaleric acid in extracts of *Euglena gracilis*. *Plant Physiol*. 70, 1495-1502.
20. Beale, S. I., and Chen, N. C. (1983) *N*-Methyl mesoporphyrin IX inhibits phycocyanin, but not chlorophyll synthesis in *Cyanidium caldarium*. *Plant Physiol*. 71, 263-268.
21. Weinstein, J. D., and Beale, S. I. (1983) Separate physiological roles and subcellular compartments for two tetrapyrrole biosynthetic pathways in *Euglena gracilis*. *J. Biol. Chem*. 258, 6799-6807.

22. Beale, S. I., and Cornejo, J. (1983) Biosynthesis of phycocyanobilin from exogenous labeled biliverdin in *Cyanidium caldarium*. *Arch. Biochem. Biophys.* 227, 279-286.
23. Weinstein, J. D., and Beale, S. I. (1984) Biosynthesis of protoheme and heme *a* precursors solely from glutamate in the unicellular red alga, *Cyanidium caldarium*. *Plant Physiol.* 74, 146-151.
24. Beale, S. I., and Cornejo, J. (1984) Enzymic transformation of biliverdin to phycocyanobilin by extracts of the unicellular red alga *Cyanidium caldarium*. *Plant Physiol.* 76, 7-15.
25. Beale, S. I., and Cornejo, J. (1984) Enzymatic heme oxygenase activity in soluble extracts of the unicellular red alga, *Cyanidium caldarium*. *Arch. Biochem. Biophys.* 235, 371-384.
26. Weinstein, J. D., and Beale, S. I. (1985) Enzymatic conversion of glutamate to δ-aminolevulinate in soluble extracts of the unicellular green alga, *Chlorella vulgaris*. *Arch. Biochem. Biophys.* 237, 454-464.
27. Weinstein, J. D., and Beale, S. I. (1985) RNA is required for enzymatic conversion of glutamate to δ-aminolevulinic acid by extracts of *Chlorella vulgaris*. *Arch. Biochem. Biophys.* 239, 87-93.
28. Weinstein, J. D., Branchaud, R., Beale, S. I., Bement, W. J., and Sinclair, P. R. (1986) Biosynthesis of the farnesyl moiety of heme *a* from mevalonic acid in cultured chick liver cells. *Arch. Biochem. Biophys.* 245, 44-50.
29. Corriveau, J. L., and Beale, S. I. (1986) Influence of gabaculine on growth, chlorophyll synthesis, and δ-aminolevulinic acid synthase activity in *Euglena gracilis*. *Plant Sci.* 45, 9-17.
30. Schneegurt, M. A., and Beale, S. I. (1986) Biosynthesis of protoheme and heme *a* from glutamate in maize. *Plant Physiol.* 81, 965-971.
31. Weinstein, J. D., Mayer, S. M., and Beale, S. I. (1986) Stimulation of δ-aminolevulinic acid formation in algal extracts by heterologous RNA. *Plant Physiol.* 82, 1096-1101.
32. Shioi, Y., and Beale, S. I. (1987) Polyethylene-based high-performance liquid chromatography of chloroplast pigments: Resolution of mono- and di-vinyl chlorophyllides and other pigment mixtures. *Anal. Biochem.* 162, 493-499.
33. Weinstein, J. D., Mayer, S. M., and Beale, S. I. (1987) Formation of δ-aminolevulinic acid from glutamic acid in algal extracts. Separation into an RNA and three required enzyme components by serial affinity chromatography. *Plant Physiol.* 84, 244-250.
34. Mayer, S. M., Weinstein, J. D., and Beale, S. I. (1987) Enzymatic conversion of glutamate to δ-aminolevulinic acid in soluble extracts of *Euglena gracilis*. *J. Biol. Chem.* 262, 12541-12549.
35. Schneegurt, M. A., and Beale, S. I. (1988) Characterization of the RNA required for biosynthesis of δ-aminolevulinic acid from glutamate. Purification by anticodon-based affinity chromatography and determination that the UUC glutamate anticodon is a general requirement for function in ALA biosynthesis. *Plant Physiol.* 86, 497-504.
36. Rieble, S., and Beale, S. I. (1988) Transformation of glutamate to δ-aminolevulinic acid by soluble extracts of *Synechocystis* sp. PCC 6803 and other oxygenic prokaryotes. *J. Biol. Chem.* 263, 8864-8871.
37. Cornejo, J., and Beale, S. I. (1988) Algal heme oxygenase from *Cyanidium caldarium*. Partial purification and fractionation into three required protein components. *J. Biol. Chem.* 263, 11915-11921.
38. Avissar, Y. J., and Beale, S. I. (1988) Biosynthesis of tetrapyrrole pigment precursors. Formation and utilization of glutamyl-tRNA for δ-aminolevulinic acid synthesis by isolated enzyme fractions from *Chlorella vulgaris*. *Plant Physiol.* 88, 879-886.
39. Schneegurt, M. A., Rieble, S., and Beale, S. I. (1988) The tRNA required for *in vitro* δ-aminolevulinic acid formation from glutamate in *Synechocystis* extracts. Determination of activity in a *Synechocystis in vitro* protein synthesizing system. *Plant Physiol.* 88, 1358-1366.
40. Avissar, Y. J., and Beale, S. I. (1989) Biosynthesis of tetrapyrrole pigment precursors. Pyridoxal requirement of the aminotransferase step in the formation of δ-aminolevulinate from glutamate in extracts of *Chlorella vulgaris*. *Plant Physiol.* 89, 852-859.
41. Avissar, Y. J., Ormerod, J. G., and Beale, S. I. (1989) Distribution of δ-aminolevulinic acid biosynthetic pathways among phototrophic bacterial groups. *Arch. Microbiol.* 151, 513-519.

42. Avissar, Y. J., and Beale, S. I. (1989) Identification of the enzymatic basis for δ-aminolevulinic acid auxotrophy in a *hemA* mutant of *Escherichia coli*. *J. Bacteriol.* 171, 2919-2924.
43. Rieble, S., Ormerod, J. G., and Beale, S. I. (1989) Transformation of glutamate to δ-aminolevulinic acid by soluble extracts of *Chlorobium vibrioforme*. *J. Bacteriol.* 171, 3782-3787.
44. Avissar, Y. J., and Beale, S. I. (1990) Cloning and expression of a structural gene from *Chlorobium vibrioforme* that complements the *hemA* mutation in *Escherichia coli*. *J. Bacteriol.* 172, 1656-1659.
45. Ormerod, J. G., Nesbakken, T., and Beale, S. I. (1990) Specific inhibition of antenna bacteriochlorophyll synthesis in *Chlorobium vibrioforme* by anesthetic gases. *J. Bacteriol.* 172, 1352-1360.
46. Mayer, S. M., and Beale, S. I. (1990) Light regulation of δ-aminolevulinic acid biosynthetic enzymes and tRNA in *Euglena gracilis*. *Plant Physiol.* 94, 1365-1375.
47. Elliott, T., Avissar, Y. J., Rhie, G., and Beale, S. I. (1990) Cloning and sequence of the *Salmonella typhimurium hemL* gene and identification of the missing enzyme in *hemL* mutants as glutamate-1-semialdehyde aminotransferase. *J. Bacteriol.* 172, 7071-7084.
48. Rieble, S., and Beale, S. I. (1991) Purification of glutamyl-tRNA reductase from *Synechocystis* sp. PCC 6803. *J. Biol. Chem.* 266, 9740-9745.
49. Majumdar, D., Avissar, Y. J., Wyche, J. H., and Beale, S. I. (1991) Structure and expression of the *Chlorobium vibrioforme hemA* gene. *Arch. Microbiol.* 156, 281-289.
50. Rieble, S., and Beale, S. I. (1991) Separation and partial characterization of enzymes catalyzing δ-aminolevulinic acid formation in *Synechocystis* sp. PCC 6803. *Arch. Biochem. Biophys.* 289, 289-297.
51. Mayer, S. M., and Beale, S. I. (1991) δ-Aminolevulinic acid biosynthesis from glutamate in *Euglena gracilis*. Photocontrol of enzyme levels in a chlorophyll-free mutant. *Plant Physiol.* 97, 1094-1102.
52. Beale, S. I., and Cornejo, J. (1991) Biosynthesis of phycobilins. Ferredoxin-mediated reduction of biliverdin catalyzed by extracts of *Cyanidium caldarium*. *J. Biol. Chem.* 266, 22328-22332.
53. Beale, S. I., and Cornejo, J. (1991) Biosynthesis of phycobilins. 3(*Z*)-Phycoerythrobilin and 3(*Z*)-phycocyanobilin are intermediates in the formation of 3(*E*)-phycocyanobilin from biliverdin IXα. *J. Biol. Chem.* 266, 22333-22340.
54. Beale, S. I., and Cornejo, J. (1991) Biosynthesis of phycobilins. 15,16-Dihydrobiliverdin IXα is a partially reduced intermediate in the formation of phycobilins from biliverdin IXα. *J. Biol. Chem.* 266, 22341-22345.
55. Mayer, S. M., and Beale, S. I (1992) Succinyl-coenzyme A synthetase and its role in δ-aminolevulinic acid biosynthesis in *Euglena gracilis*. *Plant Physiol.* 99, 482-487.
56. Cornejo, J., Beale, S. I., Terry, M. J., and Lagarias, J. C. (1992) Phytochrome assembly. The structure and biological activity of 2(*R*),3(*E*)-phytochromobilin derived from phycobiliproteins. *J. Biol. Chem.* 267, 14790-14798.
57. Rhie, G., and Beale, S. I. (1992) Biosynthesis of phycobilins. Ferredoxin-supported NADPH-independent heme oxygenase and phycobilin-forming activities from *Cyanidium caldarium*. *J. Biol. Chem.* 267, 16088-16093.
58. Schneegurt, M. A., and Beale, S. I. (1992) Origin of the chlorophyll *b* formyl oxygen in *Chlorella vulgaris*. *Biochemistry* 31, 11677-11683.
59. Rieble, S., and Beale, S. I. (1992) Structure and expression of a cyanobacterial *ilvC* gene encoding acetohydroxyacid isomeroreductase. *J. Bacteriol.* 174, 7910-7918.
60. Weinstein, J. D., Howell, R. W., Leverette, R. D., Grooms, S. Y., Brignola, P. S., Mayer, S. M., and Beale, S. I. (1993) Heme inhibition of δ-aminolevulinic acid synthesis is enhanced by glutathione in cell-free extracts of *Chlorella*. *Plant Physiol.* 101, 657-665.

61. Mayer, S. M., Gawlita, E., Avissar, Y. J., Anderson, V. E., and Beale, S. I. (1993) Intermolecular nitrogen transfer in the enzymatic conversion of glutamate to δ-aminolevulinic acid by extracts of *Chlorella vulgaris*. *Plant Physiol*. 101, 1029-1038.
62. Matters, G. L., and Beale, S. I. (1994) Biosynthesis of δ-aminolevulinic acid from glutamate by *Sulfolobus solfataricus*. *Arch. Microbiol*. 161, 272-276.
63. Rhie, G., and Beale, S. I. (1994) Regulation of heme oxygenase activity in *Cyanidium caldarium* by light, glucose, and phycobilin precursors. *J. Biol. Chem*. 269, 9620-9626.
64. Matters, G. L., and Beale, S. I. (1994) Structure and light-regulated expression of the *gsa* gene encoding the chlorophyll biosynthetic enzyme, glutamate 1-semialdehyde aminotransferase, in *Chlamydomonas reinhardtii*. *Plant Mol. Biol*. 24, 617-629.
65. Mayer, S. M., Rieble, S., and Beale, S. I. (1994) Metal requirements of the enzymes catalyzing conversion of glutamate to δ-aminolevulinic acid in extracts of *Chlorella vulgaris* and *Synechocystis* sp. PCC 6803. *Arch. Biochem. Biophys*. 312, 203-209.
66. Bollivar, D. W., Jiang, Z.-Y., Bauer, C. E., and Beale, S. I. (1994) Heterologous expression of the *bchM* gene product from *Rhodobacter capsulatus* and demonstration that it encodes *S*-adenosyl-L-methionine:Mg-protoporphyrin IX methyltransferase. *J. Bacteriol*. 176, 5290-5296.
67. Reiss, C., and Beale, S. I. (1995) External calcium requirements for light induction of chlorophyll accumulation and its enhancement by red light and cytokinin pretreatments in excised etiolated cucumber cotyledons. *Planta* 196, 635-641.
68. Bollivar, D. W., and Beale, S. I. (1995) Formation of the isocyclic ring of chlorophyll by isolated *Chlamydomonas reinhardtii* chloroplasts. *Photosynth. Res*. 43, 113-124.
69. Matters, G. L., and Beale, S. I. (1995) Structure and expression of the *Chlamydomonas reinhardtii alad* gene encoding the chlorophyll biosynthetic enzyme, δ-aminolevulinic acid dehydratase (porphobilinogen synthase). *Plant Mol. Biol*. 27, 607-617.
70. Rhie, G., and Beale, S. I. (1995) Phycobilin biosynthesis: reductant requirements and product identification for heme oxygenase from *Cyanidium caldarium*. *Arch. Biochem. Biophys*. 320, 182-194.
71. Matters, G. L., and Beale, S. I. (1995) Blue-light-regulated expression of genes for two early steps of chlorophyll biosynthesis in *Chlamydomonas reinhardtii*. *Plant Physiol*. 109, 471-479.
72. Bollivar, D. W., Elliott, T., and Beale, S. I. (1995) Anaerobic protoporphyrin biosynthesis does not require incorporation of methyl groups from methionine. *J. Bacteriol*. 177, 5778-5783.
73. Rhie, G., Avissar, Y. J., and Beale, S. I. (1996) Structure and expression of the *Chlorobium vibrioforme hemB* gene and characterization of its encoded enzyme, porphobilinogen synthase. *J. Biol. Chem*. 271, 8176-8182.
74. Bollivar, D. W., and Beale, S. I. (1996) The chlorophyll biosynthetic enzyme Mg-protoporphyrin IX monomethyl ester (oxidative) cyclase. Characterization and partial purification from *Chlamydomonas reinhardtii* and *Synechocystis* sp. PCC 6803. *Plant Physiol*. 112, 105-114.
75. Im, C., Matters, G. L., and Beale, S. I. (1996) Calcium and calmodulin are involved in blue-light induction of the *gsa* gene for an early chlorophyll biosynthetic step in *Chlamydomonas*. *Plant Cell* 8, 2245-2253.
76. Cornejo, J., and Beale, S. I. (1997) Phycobilin biosynthetic reactions in extracts of cyanobacteria. *Photosynth. Res*. 51, 223-230.
77. Cornejo, J., Willows, R. D., and Beale, S. I. (1998) Phytobilin biosynthesis: cloning and expression of a gene encoding soluble ferredoxin-dependent heme oxygenase from *Synechocystis* sp. PCC 6803. *Plant J*. 15, 99-107.
78. Herman, C. A., Im, C., and Beale, S. I. (1999) Light-regulated expression of the *gsa* gene encoding the chlorophyll biosynthetic enzyme glutamate 1-semialdehyde aminotransferase in carotenoid-deficient *Chlamydomonas reinhardtii* cells. *Plant Mol. Biol*. 39, 289-297.
79. Willows, R. D., and Beale, S. I. (1998) Heterologous expression of the *Rhodobacter capsulatus bchI*, *-D*, and *-H* genes that encode magnesium chelatase subunits and characterization of the reconstituted enzyme. *J. Biol. Chem*. 273, 34206-34213.

80. Willows, R. D., Hansson, M., Beale, S. I., Laurberg, M., and Al-Karadaghi, S. (1999) Crystallization and preliminary X-ray analysis of the *Rhodobacter capsulatus* magnesium chelatase BchI subunit. *Acta Crystallographica* D55, 689-690.
81. Im, C., and Beale, S. I. (2000) Identification of possible signal transduction components mediating light induction of the *gsa* gene for an early chlorophyll biosynthetic step in *Chlamydomonas reinhardtii*. *Planta* 210, 999-1005.
82. Willows, R. D., Mayer, S. M., Foulk, M. S., DeLong, A., Hanson, K., Chory, J., and Beale, S. I. (2000) Phytobilin biosynthesis: the *Synechocystis* sp. PCC 6803 heme oxygenase-encoding *ho1* gene complements a phytochrome-deficient *Arabidopsis thaliana HY1* mutant. *Plant Mol. Biol.* 43, 113-120.
83. Willows, R. D., Lake, V., Roberts, T. H., and Beale, S. I. (2003) Inactivation of Mg chelatase during transition from anaerobic to aerobic growth in *Rhodobacter capsulatus*. *J. Bacteriol.* 185, 3249-3258.
84. Coates, L., Beaven, G., Erskine, P. T., Beale, S. I., Avissar, Y. J., Gill, R., Mohammed, F., Wood, S. P., Shoolingin-Jordan, P., and Cooper, J. B. (2004) The X-ray structure of the plant like 5-aminolaevulinic acid dehydratase from *Chlorobium vibrioforme* complexed with the inhibitor laevulinic acid at 2.6 Å resolution. *J. Mol. Biol.* 342, 563-70.
85. Srivastava, A., and Beale, S. I. (2005) Glutamyl-tRNA Reductase of *Chlorobium vibrioforme* is a dissociable homodimer that contains one tightly bound heme per subunit. *J. Bacteriol.* 187, 4444-4450.
86. Srivastava, A., Lake, V., Nogaj, L. A., Mayer, S. M., Willows, R. D., and Beale, S. I. (2005) The *Chlamydomonas reinhardtii gtr* gene encoding the tetrapyrrole biosynthetic enzyme glutamyl-tRNA reductase: structure of the gene and properties of the expressed enzyme. *Plant Mol. Biol.* 58, 643-658.
87. Nogaj, L. A., and Beale, S. I. (2005) Physical and kinetic interactions between glutamyl-tRNA reductase and glutamate-1-semialdehyde aminotransferase of *Chlamydomonas reinhardtii*. *J. Biol. Chem.* 280, 24301-24307.
88. Nogaj, L. A., Srivastava, A., van Lis, R., and Beale, S. I. (2005) Cellular levels of glutamyl-tRNA reductase and glutamate-1-semialdehyde aminotransferase do not control chlorophyll synthesis in *Chlamydomonas reinhardtii*. *Plant Physiol.* 139, 389-396.
89. van Lis, R., Atteia, A., Nogaj, L. A., and Beale, S. I. (2005) Subcellular localization and light-regulated expression of protoporphyrinogen IX oxidase and ferrochelatase in *Chlamydomonas reinhardtii*. *Plant. Physiol.* 139, 1946-1958.
90. Atteia, A., van Lis, R., and Beale, S. I. (2005) Enzymes of the heme biosynthetic pathway in the nonphotosynthetic alga *Polytomella* sp. *Euk. Cell* 4, 2087-2097.
91. Coates, L., Beaven, G., Erskine, P. T., Beale, S. I., Wood, S. P., Shoolingin-Jordan, P. M., and Cooper, J. B. (2005) The X-ray structure of *Chlorobium vibrioforme* 5-aminolaevulinic acid dehydratase complexed with a diacid inhibitor. *Acta Crystallographica* D61, 1594-1598.

Review Articles and Invited Papers

1. Beale, S. I. (1976) The biosynthesis of δ-aminolaevulinic acid in plants. *Phil. Trans. R. Soc. London* B 273, 99-108.
2. Gough, S. P., Beale, S. I., and Granick, S. (1976) The biosynthesis of δ-aminolevulinic acid from the intact carbon skeleton of glutamic acid in greening barley. *Ann. Clin. Res.* 8 (Suppl. 17), 70-73.
3. Beale, S. I. (1978) Biosynthesis of photosynthetic pigments — pathways and regulation. In: Hall, D. O., Coombs, J., and Goodwin, T. W., eds., *Photosynthesis 77: Proceedings of the Fourth International Congress on Photosynthesis 1977*, The Biochemical Society, London, pp. 507-516.
4. Beale, S. I. (1978) δ-Aminolevulinic acid in plants: its biosynthesis, regulation, and role in plastid development. *Annu. Rev. Plant Physiol.* 29, 95-120.
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1. Beale, S. I. (2002) Tetrapyrrole photoreceptors in photosynthetic organisms (Guest Editor, Special Issue). *Photosynth. Res.* 24, 95-233.

Published Symposium Contributions

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Invited lectures (last five years)

2002 Eastern Regional Photosynthesis Conference, Woods Hole, MA
2002 Gordon Research Conference on Photosynthesis, Bristol, RI
2003 International Tetrapyrrole Discussion Group, Höör, Sweden
2004 Gordon Research Conference on Tetrapyrroles, Newport, RI
2004 International Congress on Photosynthesis, Montreal, Canada
2005 International Tetrapyrrole Discussion Group, Lucerne, Switzerland
2006 Gordon Research Conference on Tetrapyrroles, Newport, RI

Papers read (last five years, in addition to invited lectures listed above)

2002 Gordon Research Conference on Tetrapyrroles, Newport, RI
2004 Northeast Section Annual Meeting, American Society of Plant Biologists, Brown University, Providence, RI
2005 Gordon Research Conference on Photosynthesis, Smithfield, RI