12.

Boyd E. Haley, Ph.D.
Curriculum Vitae

CURRICULUM VITAE

BOYD E. HALEY, Ph.D. Born 22-09-40 Greensburg, Indiana

ADDRESS: Advanced Science Technology Commercialization Center, ASTeCC
Room A057
University of Kentucky
Lexington, KY 40506-0286
Laboratory: Telephone; (606) 257-2300 ext 246 FAX; (606) 257-3040
Chemistry Office: Telephone; (606) 257-7082

EDUCATION:

Institution	Year	Degree/Area
Franklin College	1963	B.A./Chemistry-Physics
University of Idaho	1967	M.S./Organic Chemistry
Washington State University	1971	Ph.D./Chemistry-Biochemistry
Yale University Medical Center	1971-74	Postdoctoral Fellow

RESEARCH AND PROFESSIONAL EXPERIENCE:

1963-1964	Research Scholar, Food and Drug Administration.
1964-1966	U.S. Army Medic
1966-1967	Graduate Student, University of Idaho
1967-1971	Graduate Student, Washington State University
1971-1974	Postdoctoral Scholar, Yale University
1974-1979	Assistant Professor, Department of Biochemistry, University of Wyoming, Laramie, W
1979-1981	Associate Professor, Department of Biochemistry, University of Wyoming, Laramie, W
1981-1985	Professor, Department of Biochemistry, University of Wyoming, Laramie, WY
1985-1997	Professor of Medicinal Chemistry, College of Pharmacy, University of Kentucky, with joint appointments in Biochemistry & Chemistry
1997-present	Chairman & Professor, Department of Chemistry with joint appointment in College of Pharmacy

PROFESSIONAL ORGANIZATIONS, SOCIETIES, HONORS AND RESPONSIBILITIES

1959	President's Scholarship, Franklin College, Indiana
1962	Chi Beta Phi, Franklin College
1962	James M. Sprague Award - $400 award to outstanding undergraduate junior majoring in science.
1963	Kennedy Scholar, Food and Drug Administration, Washington, D.C.
1970	Sigma Xi
1975	Dreyfus Foundation Visiting Researcher, Enzyme Institute University of Wisconsin
1977	American Society of Biological Chemists
1981	Biophysical Society
1981	Served on NIH Physiological Chemistry Study Section
1981	Research was presented as a "highlight" in NIH report on "Cellular and Molecular Basis of Disease Program"
1984	"TOP" Professor Award, University of Wyoming
1982	Served on NIH Physiological Chemistry Study Section
1983	Served on NIH Physiological Chemistry Study Section
1985	Permanent member NIH Biomedical Sciences, Study Section
1991	Honorary Doctorate in Arts & Sciences, Franklin College
1992	Society for Neuroscience

GRANT SUPPORT

1975 - 1978 National Institutes of Health, "Application of Photoaffinity Nucleotide Analogs", $82,000, Prinicipal Investigator

1975 Research Coordination Committee, University of Wyoming $1,800

1978 - 1981 National Institutes of Health, "Application of Photoaffinity Nucleotide Analogs", $183,696, Prinicipal Investigator

1978 - 1981 Eleanor Roosevelt Cancer Institute Grant, $11,400

1979 - 1983 PHS Research Career Development Award, $185,000

1981 - 1986 National Institutes of Health, "Application of Photoaffinity Nucleotide Analogs", $434,000, Prinicipal Investigator

1982 ASBC Travel Award to attend 12th IVB Congress, Perth, Australia

1983 - 1984 National Science Foundation, "Melatonin Photoaffinity Probe", $84,000, Co-Principal Investigator

1983 - 1985 National Institutes of Health, "Epididymal Sperm Nucleotide Binding proteins", $190,000, Co-Principal Investigator

1985 - 1988 U.S. Army Mycotoxin Photoprobes, $390,000, Co-Principal Investigator

1986 - 1989 NIH, "Forskolin Photoaffinity Probes", $170,000, Co-Principal Investigator

1986 - 1991 NIH, "Application of Photoaffinity Nucleotide Analogs" $781,661, Principal Investigator

1989 - 1994 NIH, "Nucleotide-Tubulin Interactions in Alzheimer's Disease", $405,259, Co-Prinicipal Investigator

1990 - 1996 Lexington Clinic Foundation For Medical Education and Research, "Inhibition of Neoplastic C Proliferation Through Utilization of Photoactive DNA & RNA Synthesis, $100,000, P.I.

1990 - 1993 Eli Lilly, "Development of a Diagnostic Test for Alzheimer's Disease, $378,000, P.I.

1995 - 1997 Wallace Research Foundation, "Development of Diagnostic Tests Using Nucleotide Photoaffinity Probes". $109,000 for two years.

1997-1998 Wallace Research Foundation, "Development of Diagnostic Tests Using Nucleotide Photoaffinity Probes". $74,344.

1997-2000 NIH, "Application of Photoaffinity Nucleotide Analogs", $378,081, P.I.

1997-1998 Isostent, Inc. "Photoattachment of ^{32}P to angioplastic ballon cathers" $52,000.

Pending NIH, "Identification of CSF proteins Related to ALS"
NIH, "Photomodification of Antibodies for Diagnostic and Therapeutic Applications".

TEACHING EXPERIENCE

Introductory Comparative Biochemistry
General Biochemistry
Problems and Topics in Biochemistry
Mercury Toxicity: Chemistry and Biochemistry Involved
Advanced Problems and Topics in Biochemistry
Nucleic Acids and Protein Biosynthesis
Nucleotides in Regulation of Biological Phenomena
Bioenergetics
Medicinal Chemistry
Natural Products and Bio-organics
Graduate level Biochemistry, Protein Chemistry

INVITED LECTURES:

1975 - thru 1979	Sloan Kettering Memorial Cancer Institute, New York Colorado State University (3) Albert Einstein University, New York Hoffman-LaRoche Research Institute, Nutley, New Jersey University of Colorado Medical School Denver (3) University of Colorado, Boulder (2) Yale University Medical School (2) The Salk Institute, San Diego University of California, Davis Stanford University Medical School University of California, San Diego University of Washington, Seattle Washington State University Kansas State University
1979	Symposium Speaker, ASBC Meeting, Dallas, Texas
1979	Symposium Speaker, New York Academy of Sciences Meeting, New York Department of Molecular Biology, National Jewish Hospital, Denver University of California, Riverside Workshop Speaker, ICN-UCLA Conference on Adenylyl Cyclase
1982	Symposium Speaker, 1982 FASEB Meeting, New Orleans
1982	Guest Lecturer and Scientist, German Cancer Research Center, Institute of Cell and Tumor Biology, Heidelberg, West Germany, May
1982	Centre National De La Recherche Scientifique, Laboratoire D'Enzymologie, Gif Sur Yvette, France, June
1982	Workshop Speaker, ASBC Meeting in New Orleans (Photoprobe utilization, sponsored by Schwarz-Mann)
1982	Symposium Speaker, Society for the Study of Reproduction, Madison Wisconsin, August
1982	Department of Biochemistry, University of Wisconsin, November
1982	Department of Chemistry, New Mexico State University, November
1982	Department of Chemistry, University of Colorado, December
1983	Institute of Infectious Diseases, U.S. Army Medical Research Institute, Ft. Detrick, Michigan, January
1983	Department of Biochemistry and Biophysics, Oregon State University
1983	Department of Biochemistry, Texas Health Science Center, San Antonio, TX
1983	Department of Biochemistry, University of Mississippi Medical Center
1984	Department of Biochemistry, University of Kentucky, Lexington, KY
1985	Department of Physiology and Biophysics, Northwestern University Medical School, Chicago, Illinois
1985	Department of Chemistry, University of Southern California, Los Angeles, California

1985 Department of Physiology, University of Illionis at Chicago, Chicago, Illinois
1985 Department of Biochemistry, Ohio State University, Columbus, Ohio
1985 Department of Physiology, Yale University Medical School, New Haven, Connecticut
1986 Department of Biochemistry, Case Western University, School of Medicine, Cleveland, Ohio
1986 Department of Biochemistry, Indiana University, School of Medicine, Indianapolis, Indiana
1986 Department of Biochemistry, Washington University, School of Medicine, St. Louis, Missouri
1987 Division Fermentation Products Research Division, Eli Lilly Research Laboratories, Indianapolis, Indiana
1987 Department of Chemistry, University of South Florida, Tampa, Florida
1987 Department of Molecular Biology and Biochemistry, University of Wyoming, Laramie, Wyoming
1988 Worcester Foundation, Shrewsbury, Massachusetts
1988 Department of Biochemistry, University of Colorado, Denver, Colorado
1988 Department of Biochemistry, University of Delaware, Newark, Delaware
1989 University of California at San Diego
1989 University of California at Los Angeles
1989 Texas College of Osteopathic Medicine, Fort Worth, Texas
1990 Wright State University, Dayton, Ohio
1990 Athena Neurosciences, S. San Francisco, California
1990 Eli Lilly & Co., Indianapolis, Indiana
1990 Connaught Laboratories, Toronto, Canada
1990 University of East Carolina Medical School, Greenville, North Carolina
1990 Hoffman-LaRoche Research Center, Nutley, New Jersey
1991 Eli Lilly & Co., Indianapolis, Indiana
1991 City University of New York, New York, New York
1991 University of Cincinnati, Cincinnati, Ohio
1991 University of Colorado, Boulder, Colorado
1991 University of Missouri at Kansas, Kansas City, Missouri
1992 Williams College at Williamsburg, Massachusetts
1992 Centre College at Danville, Kentucky
1992 University of Colorado, Boulder, Colorado
1992 Eli Lilly & Co., Indianapolis, Indiana
1992 Merck Laboratories, West Point, Pennsylvania
1993 NIH Rocky Mountain Laboratory, Hamilton, MT
1993 Intern. Acad. Oral & Medical Toxicology, Chicago, IL
1993 Univ. Tenn. at Memphis, Memphis, TN
1993 Penn State University, College Station, PN
1993 University California, Riverside, Riverside, CA
1993 Mayo Clinic, Jacksonville, FL
1993 Washington University, St. Louis, MO
1993 University of Arkansas, Little Rock, AR
1994 European Academy of Science, Otzenhausen, Germany
1994 Intern. Acad. Oral & Medical Toxicology, London, England.
1994 Great Lakes College for Advancement of Medicine, Cincinnati, OH
1995 American College for the Advancement of Medicine, Colorado Springs, CO.
1995 Pfizer Pharmaceuticals, Groton, CN
1995 Ohio State University, Dept,. Chemistry, Columbus, OH
1996 Intern. Acad. Oral & Medical Toxicology, Tuscon, AZ
1996 University of Wyoming, Laramie WY
1996 American College for the Advancement of Medicine, Colorado Springs, CO.
1997 American Academy Biological Dentistry, Carmel, CA March 7-9.
1997 International Academy of Oral and Medical Toxicology, Louisville, KY March 14-16
1997 Washington State University, Dept. of Chemistry and Biophysics, Pullman, WA, March 27-30.
1997 American Society of Biochemistry and Molecular Biology, Symposium talk, August 24-28.
1997 Canadian Academy Oral and Medical Toxicology, Toronto, Canada. September 19-21.
1997 Capital University of Integrative Medicine, Washington, DC, October 16-18

1997 American Academy Environmental Medicine, San Diego, CA, October 24-26.
1997 University of Missouri at Kansas City, Dept. Biology & Biophysics, November 20-22.

SERVICE TO DEPARTMENT, COLLEGE AND UNIVERSITY:

1975-1979	Faculty Senate
	Biological Interdepartmental Seminar Committee
	University Grievance Procedure Committee
	College of Agriculture Teaching Improvement Committee
	College of Agriculture Academic Planning Committee
	Faculty Senate Nominating Committee
	Division of Biochemistry Undergraduate Teaching Committee
	Division of Biochemistry Graduate Program Committee
	University Research Coordination Committee
	Chairman of the Graduate Committee, Biochemistry Department
1979-1982	College of Agriculture Tenure and Promotion Committee
1979	College of Agriculture Dean Search Committee
1981	Vice-President for Research Search Committee
1981	College of Human Medicine Evaluation Committee
1981-1982	Biomedical Research Funding Committee
1982	Chairman, Department of Zoology and Physiology Review Committee
1986	Research Committee College of Medicine
	Ad Hoc Committee to Review Center on Aging
	Ad Hoc Medical Center Research Advisory Committee
	Working Group for Biotechnology Center
	Center for Pharmaceutical Science and Technology Advisory Committee
	College of Pharmacy Graduate Program
	College of Pharmacy Research and Seminar
1987	Markey Cancer Center Internal Advisory Committee
	College of Medicine Research Committee
	Tobacco and Health Advisory Committee
1988	College of Pharmacy BRSG Committee, Tenure and Promotion
1989	Chairman, College of Medicine BRSG Committee
	Member, Tobacco & Health Advisory Committee
	Member, Markey Cancer Center Advisory Committee
1990	Chairman, College of Medicine BRSG Committee
1991-1992	Member, Intellectual Properties Committee
	Member, Search Committee Cancer Center Director
	Member, Cancer Center Advisory Committee
	Member, Search Committee Diagnostic Radiology Chair
	Member, Academic Area Committee, Biological Sciences
1993-1995	Chair, Research and Seminar Committee
	Member, Appointment, Tenure and Promotion Committee
1996-1997	Chair, Graduate Program task force, College of Pharmacy
	Chair, Physical Plant section, College of Pharmacy self-study
	University Chemical Safety Committee
	College of Medicine Academic Council
	College of Pharmacy Tenure and Promotion Committee

PUBLICATIONS (REFEREED JOURNALS)

1. Haley, B. and Yount, R. Gamma-fluoradenosine Triphosphate.Synthesis, Properties and Interaction with Myosin and Heavy Meromyosin. Biochemistry II, 2863-2871 (1972).

2. Haley, B., Yount and Hoffman, J. Selective Inhibition of Divalent Metal Ion Requiring ATPase Activity Human Red Cell Ghost by an Analog of ATP. The Physiologist 16, 333-334 (1973).

3. Haley, B. and Hoffman, J. Interactions of Photo-Affinity ATP Analog with Cation-Stimulated ATPase Activities of Human Red Cell Ghost. Proc. Natl. Acad. Sci. 71, 3367-3371 (1974).

4. Staros, J.V., Haley, B. and Richards, F.M. Human Erythrocytes and Resealed Ghost: A Comparison of Membrane Topology. J. Biol. Chem. 249, 5004-5007 (1974).

5. Pomerantz, A., Rudolph, S.A., Haley, B. and Greengard, P. Photoaffinity Labeling of a Protein Kinase from Bovine Brain with 8-Azido-adenosine-3', 5'-monophosphate. Biochemistry 14, 3852-3857 (1975).

6. Haley, B. Photoaffinity Labeling of cAMP Binding Sites of Human Red Blood Cell Membranes. Biochemistry 14, 3852-3857 (1975).

7. Staros, J.V., Richards, F.M. and Haley, B. Photochemical Labeling of the Cytoplasmic Surface of the Membranes of Intact Human Erythrocytes. J. Biol. Chem. 250, 8174-8178 (1975).

8. Malkinson, A.M., Krueger, B.V., Rudolph, S.A., Casnelli, J.E., Haley, B. and Greengard, P. Widespread Occurence of a Specific Protein in Vertebrate Tissues and Regulation by cAMP of its Endogenous Phosphorylation and Dephosphorylation. Metabolism 24, 331-341 (1975).

9. Haley, B. Photoaffinity Labeling of Adenosine 3', 5'-Cyclic Monophosphate Binding Sites. Methods in Enzymology, Jacoby and Wilchek, Editors. V 46, pp. 339-346 (1976).

10. Owens, J.R. and Haley, B.E. A Study of Adenosine 3', 5'-Cyclic Monophosphate Binding Sites of Humar Erythrocyte Membranes Using 8-Azido-adenosine-3'-5' Cyclic Monophosphate. J. Supra. Mole. Structur 5, 91-102 (1976).

11. Skare, K., Black, J.L., Pancoe, W.L. and Haley, B. Determination of the Cellular Location of Cyclic Nucleotide Binding Sites Using 8-Azido-adenosine-3', 5'-monophosphate, A Photoaffinity Probe. Arch. Biochem. Biophy. 180, 409-415 (1977).

12. Lau, E., Haley, B. and Barden, R. Interactions of a Photoaffinity Analog of CoA with CoA Enzymes. Biochemistry 16, 2581-2585 (1977).

13. Owens, J.R. and Haley, B. A Study of Adenosine 3', 5'-Cyclic Nucleotide Binding Sites of Human Erythrocyte Membranes Using 8-Azido-adenosine 3'-5'-Cyclic Monophosphate. Cell Shape and Surface Architecture: Progress in Clinical and Biological Research 17, 65-76 (1977)

14. Lau, E.P., Haley, B. and Barden, R. The 8-Azidoadenine Analog of S-Benzoyl (3'-dephospho) Coenzyme A-A Photoaffinity Label for Acyl CoA; Glycine N-Acyltransferase. Biochem. Biophys. Res. Commun 76 843-849 (1977).

15. Geahlen, R.T. and Haley, B. Interactions of a Photoaffinity Analog of GTP with the Proteins of Microtubules. Proc. Natl. Acad. Sci. 74, 4375-4377 (1977).

16. Owens, J.R. and Haley, B. Use of Photoaffinity Nucleotide Analogs to Determine the Mechanism of ATI Regulation of a Membrane Bound, cAMP Activated Protein Kinase. J. Supra. Mole. Structure 9, 57-68 (1978).

17. Czarnecki, J., Geahlen, R.T. and Haley, B. Synthesis and Use of Azido Photoaffinity Analogs of Adenine and Guanine Nucleotides. Methods in Enzymology 56, 642-653 (1979).

18. Marcus, F. and Haley, B. Inhibition of Fructose 1,6-biphosphatase by the Photoreactive AMP Analog, 8-Azido-AMP. J. Biol. Chem. 254, 259-261 (1979).

19. Geahlen, R., Haley, B. and Krebs, E.G. Synthesis and Use of 8-azidoguanosine 3', 5'-cyclic Monophosphate as a Photoaffinity Label for Cyclic GMP-dependent Protein Kinase. Proc. Natl. Acad. Sci. 76, 2213-2217 (1979).

20. Geahlen, R. and Haley, B. Use of GTP Photoaffinity Probe to Resolve Aspects of the Mechanism of Tubulin Polymerization. J. Biol. Chem. 254, 11982-11987 (1979).

21. Haley, B. Application of Photoaffinity Nucleotide Analogs to Biological Membrane Research. Selected Aspects of Cancer-Related Protein, Carbohydrate, Lipid and other Biochemistry, International Cancer Research Data Bank, p. 87 (1979).

22. Owens, J. and Haley, B. Mechanism of MgATP Regulation of Membrane Bound Type I cAMP Activated Protein Kinase. Transmembrane Signaling. Alan R. Liss, Inc. New York, New York, pp. 149-160 (1979).

23. Forrester, I.T., P.K. Schoff, B.E. Haley and R.G. Atherton. Determination of Protein Kinase Activity in Intact Mammalian Sperm. J. of Andrology 1, 70 (1980).

24. Briggs, F. Norman, Al-Jumaily, Walid and Haley, Boyd. Photoaffinity Labeling of the ($Ca^{+}Mg$) ATPase of Skeletal and Cardiac Sarcoplasmic Reticulum with [^{32}P-]-8-Azido ATP. Cell Calcium 1, 205-215 (1980).

25. Hoyer, P., Owens, J.R. and Haley, B.E. Use of Nucleotide Photoaffinity Probes to Elucidate Molecular Mechanisms of Nucleotide Regulated Phenomena. Annals of New York Academy of Science 346, 280-301 (1980).

26. Takemoto, D.J., B.E. Haley, J. Hanse, P. Pinbett and L.J. Takemoto. GTPase from Rod Outer Segments: Characterization by Photoaffinity Labeling and Tryptic Peptide Mapping. Biochem. Biophys. Res. Commun. 102, 341-347 (1981).

27. Leichtling, B.H., Coffman, D.S., Yaeger, E.S., Rickenberg, H.V., Al-Jumaily, W. and Haley, B.E. Occurrence of the Adenylate Cyclase "G-Protein" in Membranes of Dictyostelium discoidium, Biochem. Biophys. Res. Commun. 102, 1187-1195 (1981).

28. Schoff, P.K., Forester, I.T., Haley, B.E. and Atherton, R. A Study of cAMP Binding Proteins on Intact and Distrupted Sperm Cells Using 8-Azidoadenosine-3', 5'-Cyclic Monophosphate. J. Supra. Molecular Structure 19, 1-15 (1982).

29. King, M.M., Carlson, G. and Haley, B.E. Photoaffinity-Labeling of the Subunit of Phosphorylase Kinase by 8-Azidoadenosine-5'-Triphosphate and its 2', 3' -Dialdehyde Derivative. J. Biol. Chem. 257, 14058-14065 (1982).

30. Potter, R. and Haley, B.E. Photoaffinity Labeling of Nucleotide Binding Sites with 8-Azidopurine Analogs. Meth. Enzymol. 91, 613-633 (1982).

31. Hoyer, P.B. and Haley, B.E. Utilization of Nucleotide Photoaffinity Probes to Study Protein-Nucleotide Interactions in Cell Fractions. J. Cellular Biochemistry, submitted. (1983)

32. Haley, Boyd. Development and Utilization of 8-Azidopurine Nucleotide Photoaffinity Probes. Federation Proceedings 42, 2831-2836 (1983).

33. Khatoon, S., Atherton, R. Al-Jumaily, W. and Haley, B.E. Use of Nucleotide Photoaffinity Probes to Study Hormone Action. Biology of Reproduction 28, 61-73 (1983).

34. Kaiser, I.I., Kladianos, D.M., Van Kirk, E.A., and Haley, B.E. Photoaffinity Labeling of catechol-o-methyltransferase with 8'-Azido-S-adenosylmethionine. J. Biol. Chem. 258, 1747-1751 (1983).

35. Abraham, K., Haley, B. and Modak, M. Biochemistry of Terminal Deoxynucleotidyl Transferase: 8-Azido ATP as A Substrate Binding Site-Directed Photoaffinity Labeling Prob. Biochemistry 22, 4197-4203 (1983).

36. Haley, B.E., Ponstingl, H. and Doenges, K.H. Photoaffinity Labeling of Pure Tubulin Using 8-Azidoguanosine triphosphate at the β-Subunit. Hoppe-Seylers J. Physiol. Chem. 364, 1137 (1983).

37. Woody, A.M., Vader, C.R., Woody, R.W. and Haley, B.E. Photoaffinity Labeling of DNA-dependent RNA polymerase from E. coli with 8-azidoadenosine-5'-triphosphate. Biochemistry 23, 2843-2848 (1984).

38. Owens, J.R. and Haley, B.E. Synthesis and Utilization of [5'-^{32}P]-8-Azidoguanosine-3'-phosphate-5'-phosphate: Photoaffinity Studies on Cytosolic Proteins of E. coli. J. Biol. Chem. 259, 14843-14848 (1984).

39. Pfister, K.K. , Haley, B.E. and Witman, G.B. The Photoaffinity Probe 8-azidoadenosine-5'-triphosphate. Selectivity Labels the Heavy Chain of Chlamydomonas 12S Dynein. J. Biol. Chem. 259, 8499-8504 (1984).

40. Atherton, R.W., Khatoon, S., Schoff, P.K. and Haley, B.E. A Study of Rat Epididymal Sperm Adenosine-3', 5'-monophosphate-dependent Protein Kinase: Maturation Differences and Cellular Location. Biol. of Reproduction 32, 155-172 (1985).

41. McMurray, M.M., Hansen, J.S., Haley, B.E., Takemoto, D.J. and Takemoto, L.J. Interspecies Conservation of Retinal Guanosine-5'-triphosphatase: Characterization by Photoaffinity Labeling and Tryptic Peptide Mapping. Biochemical Journal 225, 227-232 (1985).

42. Khatoon, S., Haley, B.E. and Atherton, R.W. A Comparative Analysis of cAMP-dependent Protein Kinase Regulatory Subunits in Sea Urchin and Rat Sperm. J. Andrology 6, 251-260 (1985).

43. DeBortoli, M.E., Issa, H.A., Haley, B.E. and Cho-Chung, Y.S. Elevated Levels of p21 ras Protein in Hormone-Dependent Mammary Carcinomas of Humans and Rodents. Bioch. Biophys. Res. Commun. 127, 699-709 (1985).

44. Evans, R., Haley, B. and Roth, D. Photoaffinity Labeling of a Viral Induced Protein from Tobacco. J. Biol. Chem. 260, 7800-7804 (1985).

45. Nunamaker, R.A., Wilson, W.T. and Haley, B.E. Electrophoretic Detection of Africanized Honey Bees (Apis mellifera scutellata) in Guatemala and Mexico Based on Malate Dehydrogenase Allozyme Patterns. Journal of the Entomological Society 57, 622-631 (1985).

46. Pfister, K.K., Haley, B.E. and Witman, G.B. Labeling of Chlamydomonas 18S Dynein Polypeptides by 8-Azidoadenosine 5'-Triphosphate, a Photoaffinity Analog of ATP. J. Biol. Chem. 260, 12844-12850 (1985).

47. Hoyer, P.B., Fletcher, P. and Haley, B.E. Synthesis of 2', 3'-0-(2,4,6,-trinitrocyclohexadienylidine) guanosine 5'-Triphosphate and study of its Inhibitory Properties with Adenylate Cyclase. Arch. Biochem. Biophys. 245, 368-378 (1986).

48. Evans, R.K., Johnson, J.D. and Haley, B.E. 5'-Azido-2'-deoxyuridine-5'-triphosphate: A Novel Photoaffinity Labeling Reagent and Tool for the Enzymatic Synthesis of Photoactive DNA. Proc. Natl. Acad. Sci. USA. 83, pp. 5382-5386 (1986).

49. Jeganathan, A., Richardson, S.K., Mani, R.S., Haley, B.E. and Watt, D.S. Selective Reactions of Azide-substituted α-Diazoamides with Olefins and Alcohols Using Rhodium (II) Catalysts. J. Org. Chem. 51, 5362-5367 (1986).

50. Malkinson, A.M., Haley, B.E., Macintyre, B.E. and Buthy, M.S. Changes in Pulmonary Adenosine Triphosphate Binding Proteins Detected by Nucleotide Photoaffinity Labeling Following Treatment of Mice with the Tumor-Modulatory Agent Butylated Hydroxytoluene. Cancer Res. 46, 4626-4630 (1986).

51. Evans, R.K. and Haley, B.E. Synthesis and Biological Properties of 5-Azido-2'-deoxyuridine-5'-triphosphate: A Photoactive Nucleotide Suitable for Making Light Sensitive DNA. Biochemistry 26, 269-276 (1987).

52. Richardson, S.K., Jeganathan, A., Mani, R.S., Haley, B.E. and Watt, D.S. Synthesis and Biological Activity of C-4 and C-15 Aryl Azide Derivatives of Anguidine. Tetrahedron Letters 43, 2925 (1987).

53. Droms, K.A., Haley, B.E. and Malkinson, A.M. Decreased Incorporation of the Photoaffinity Probe [γ^{3232}P]-8N_3 GTP into a 45KD Protein in Lung Tumors. Bioch. Biophys. Res. Commun. 144, 591-597 (1987).

54. Karpel, R.L., Levin, V.Y. and Haley, B.E. Photoaffinity Labeling of T4 Bacteriophage 32Protein. J.Biol.Chem. 262, 9359-66 (1987).

55. Suhadolnik, R.J., Li, Shi Wu, Sobol, Jr. R.W., and Haley, B.E. 2-and 8-Azido Photoaffinity Probes. II. Studies on the Binding Process of 2-5A Synthetase. Biochemistry 27, 8846-8851 (1988).

56. Suhadolnik, R.J., Kariko, K., Sobol, Jr., R.W., Shi Wu, Richenbach, N.L. and Haley, B.E. 2- and 8-Azido Photoaffinity Probes. I. Enzymatic Synthesis, Characterization and Biological Properties of 2- and 8-Azido Photoprobes of 2-5A & Photolabeling of 2-5A Binding Proteins. Biochemistry 27, 8840-8846 (1988).

57. Droms, K.A., Haley, B.E., Smith, G.J. and Malkinson, A.M. Decreased Photolabeling of $G_{s\alpha}$ With [α-^{32}P]8N_3-GTP in Tumorigenic Lung Epithelial Cell Lines: Association with Decreased Hormone Responsiveness and Loss of Contact-Inhibited Growth. Experimental Cell Research 182, 330-339 (1989).

58. Francis, B., Overmeyer, J., John, W., Marshall, E. and Haley, B. Prevalence of Nucleoside Diphosphate Kinase Autophosphorylation in Human Colon Carcinoma versus Normal Colon Homogenates. Molecular Carcinogenesis 2, 168-178 (1989).

59. King, S.M., Haley, B.E. and Witman, G.B. Structure of the α and β Heavy Chains of the Outer Arm Dynein from Chlamydomonas Flagella. J. Biol. Chem. 264, 10210-10218 (1989).

60. Khatoon, S., Campbell, S.R., Haley, B.E. and Slevin, J.T. Aberrant GTP β-Tubulin Interaction in Alzheimer's Disease. Annals of Neurology 26, 210-215 (1989).

61. Lawson, S.G., Mason, T.L., Sabin, R.D., Sloan, M.E., Drake, R.R., Haley, B.E. and Wasserman, B.P. UDP-Glucose: (1,3)-B-Glucan Synthase from Daucas carota L.: Characterization, Photoaffinity Labeling and Solubilization. Journal of Plant Physiology 90, 101-108 (1989).

62. Lewis, C.T., Haley, B.E. and Carlson, G.M. Formation of an Intramolecular Cystine Disulfide During the Reaction of 8-Azido-GTP with Cytosolic Phosphoenolpyruvate Carboxykinase (GTP) Causes Inactivation without Photolabeling. Biochemistry 28, 9248-9255 (1989).

63. Ho, L.T., Nie, Z.M., Mende, T.J., Richardson, S., Chavan, A., Kolaczkowska, E., Watt, D.S., Haley, B.E. and Ho, R.J. Modification of Adenylate Cyclase by Photoaffinity Analogs of Forskolin. J. Second Messengers and Phosphoproteins 12, 209-223 (1989).

64. Wasserman, B.P., Read, S.M., Frost, D.J., Mason, T.L., Drake, R.R. and Haley, B.E. Potential use of Affinity Labels in Subunit Identification Studies of (1,3)-β-Glucan Synthase. J.Applied Polymer Science Symposium (Proceeding of the Tenth Cellulose Conference, Syracuse, NY). C. Schuerch and T. Timell, Eds. 43, 827-837 (1989).

65. Drake, R.R., Evans, R.K., Wolf, M.J. and Haley, B.E. Synthesis and Properties of 5-Azido-UDP-Glucose: Development of Photoaffinity Probes for Nucleotide Diphosphate Sugar Binding Sites. J. Biol. Chem. 264,

11928-11933 (1989).

66. Dholakia, J.N., Francis, B.R., Haley, B.E. and Wahba, A. Photoaffinity Labeling of the Rabbit Reticulocyte Guanine Nucleotide Exchange Factor and Eukaryotic Initiation Factor 2 with 8-Azidopurine Nucleotides. J. Biol. Chem. 264, 20638-20642 (1989).

67. Campbell,S., Kim, H., Doukas, M. and Haley, B. Photoaffinity Labeling of ATP and NAD^+ Binding Sites on Recombinant Human Interleukin-2. Proc. Natl. Acad. Sci. 87, 1243-1246 (1990).

68. Kim, H. and Haley, B. Synthesis and Properties of 2-Azido-NAD^+: A Study of Interactions with Glutamate Dehydrogenase. J. Biol. Chem. 265, 3636-3641 (1990).

69. Drake, R., Palamarczyk, G., Haley, B. and Lennarz, W.J. Evidence for the Involvement of a 35-kDa Membrane Protein in the Synthesis of Glucosylphosphoryldolichol. Bioscience Reports 10, 61-68 (1990).

70. Marchase, R.B., Richardson, K.L., Srisomsap, C., Drake, R. and Haley, B.E. Resolution of Phosphoglucomutase and the 62 kDa Acceptor for the Glucosylphosphotransferase. Arch. Biochim. Biophys. 280, 122-129. (1990).

71. Salvucci, M.E. and Haley, B.E. Photoaffinity Labeling of Ribulose Bisphosphate Carboxylase/Oxygenase With 8-Azidoadenosine 5'-Triphosphate. Planta 181, 287-295 (1990).

72. Salvucci, M.E., Drake, R., Broadbent, K.P., Haley, B.E., Hanson, K.R. and McHale, N.A. Identification of the 64 Kilodalton Chloroplast Stromal Phosphoprotein as Phosphoglucomutase. Plant Physiology 93, 105-109 (1990).

73. Frost, D.J., Read, S.M., Drake, R., Haley, B.E. and Wasserman, B.P. Identification of the UDPG Binding Polypeptide of (1,3)-β-Glucan Synthase From A Higher Plant by Photoaffinity Labeling with 5-AzidoUDP-Glucose. J. Biol. Chem. 265, 2162-2167 (1990).

74. Lin, F.C., Brown, R.M. Jr., Drake, R.R. and Haley, B.E. Characterization of Cellulose Synthase Catalytic Subunit of Acetobacter xylinum Using 5-Azido-UDP-glc, A Photoaffinity Probe. J. Biol. Chem. 265, 4782-4784 (1990).

75. Salvucci, M.E., Drake, R.R., and Haley, B.E. Purification and Photoaffinity Labeling of Sucrose Phosphate Synthase from Spinach Leaves. Arch. Biochem. Biophys. 281, 212-218 (1990).

76. Chavan, A.J., Kim, H., Haley, B.E., and Watt, D.S. A Photoactive Phosphonamide Derivative of GTP for the Identification of the GTP Binding Domain of β-Tubulin. Bioconjugate Chemistry, 1, No. 5, 337-344 (1990).

77. Kwiatkowski, S., Crocker, P.J., Chavan, A.J., Nobuyuki, I., Haley, B.E. and Watt, D.S. Thiazolidine and Thiazoline Derivatives of 3-Aryl 3-Trifluormethyl Diazirines for the Preparation of Fluorescent or ^{35}S-Radiolabeled Photoaffinity Probes. Tetrahedron Lett, 31, 2093-2096 (1990).

78. Palamarczyk, G., Drake, R., Haley, B. and Lennarz, W.J. Evidence that the Synthesis of Glucosylphosphoryl Dolichol in Yeast Involves a 35 kDa Membrane Protein. Proc. Natl. Acad. Sci. 87, 2666-2670 (1990).

79. King, S., Kim, H., and Haley, B. Strategies and Reagents for Photoaffinity Labeling of Mechanochemical Proteins. Meth. Enzymol. 196, 449-466 (1991).

80. Kim, H. and Haley, B. Identification of Peptides in the Adenine Ring Binding Domain of Glutamate and Lactate Dehydrogenase Using 2-AzidoNAD$^+$. Bioconjugate Chemistry 2, 1142-147 (1991).

81. Mann, D., Haley, B., and Greenberg, R. Photoaffinity Labeling of Atrial Natriurtic Factor Analog Atriopeptin III woith [$\gamma^{32}P$]8N_3GTP. Peptide Research 4, #2, 79-83 (1991).

82. Drake, R.R., Zimniak, P., Haley, B.E., Lester, R., Elbein, A.D. and Radominska, A. Synthesis and Characterization of5-Azido-UDP-Glucuronic Acid. J. Biol. Chem., 266, 23257-23260 (1991).

83. Drake, R.R., Zimniak, P., Haley, B.E., Lester, R., Elbein, A.D. and Radominska, A. Synthesis and Characterization of5-Azido-UDP-Glucuronic Acid. J. Biol. Chem., 266, 23257-23260 (1991).

84. Hiestand, D., Haley, B., and Kindy, M. Role of Calcium inInactivation of Calcium/Calmodulin Dependent Protein Kinase II After Cerebral Ischemia. Journal of the Neurological Sciences, 113, 31-37 (1992).

85. Salvucci, M., Chavan, A. and Haley, B. Identification of Peptides for the Adenine Binding Domains of ATP and AMP in Adenylate Kinase: Isolation of Photoaffinity Labeled Peptides by Metal Chelate Chromatography. Biochemistry 31 4479-4487 (1992).

86. Shoemaker, M., Lin, P.C., and Haley, B. Identification of the Guanine Binding Domain Peptide of the GTP Binding Site of Glucagon. Protein Science 1, 884-891 (1992).

87. Doukas, M., Chavan, A., Gass, C., Boone, T. and Haley, B. Identification and charaterization of a Nucleotide Binding Site on Recombinant Murine Granulocyte/Macrophage-Colony Stimulating Factor. Bioconjugate Chemistry 3, 484-492 (1992).

88. Segal, A., West, I., Wientjes, F., Nugent, J., Chavan, A., Haley, B., Garcia, R., Rosen, H. and Scrace, G. Cytochrome $b\text{-}_{245}$ is a Flavocytochrome Containing FAD and the NADPH Binding Site of the Microbicidal Oxidase of Phagocytes. Biochem. J. 284, 781-788 (1992).

89. Hammond, D., Haley, B. and Lesnaw, J. Identification and Characterization of Serine/Threonine Protein Kinase ActivityIntrinsic to the L Protein of Vesicular Stomatitis Virus New Jersey. Journal of General Virology 73, 67-75 (1992)

90. Chavan, A., Nemoto, Y., Narumiya, S., Kozaki, S., and Haley, B. NAD^+ Binding Site of Clostridium botulinum C3 ADP-ribosyltransferase: Identification of Peptide in the Adenine Ring Binding Domain using 2-Azido NAD^+. J. Biol. Chem. 267, 14866-14870 (1992).

91. Gunnersen, D.J. and Haley, B.E. Detection of Glutamine Synthetase in the Cerebrospinal Fluid of Alzheimer's Diseased Patients: A Potential Diagnostic Biochemical Marker. Proc. Natl. Acad. Sci. USA, 89 pp. 11949-11953 (1992).

92. Shoemaker, M., and Haley, B. Identification of a Guanine Binding Domain Peptide of the GTP Binding Site of Glutamate Dehydrogenase: Isolation with Metal-Chelate Affinity Chromatography. Biochemistry 32, 1883-1890 (1993).

93. Churn, S.B., Sankaran, B., Haley, B.E. and Delorenzo, R.J. Ischemic Brain Injury Selectively Alters ATP Binding of Calcium and Calmodulin-Dependent Protein Kinase-II. Biochem. Biophys. Res. Comm. 193:3, 934-940 (1993).

94. Salvucci, M., Rajagopalan, K., Sievert, G., Haley, B. and Watt, D. Photoaffinity Labeling of Rubisco Activase with ATP–γ-benzophenone: Identification of the ATP γ-Phosphate Binding Domain J. Biol. Chem. 268, 14239-14244 (1993).

95. Rajagopalan, K., Chavan, A., Haley, B. and Watt, D. Bidentate Cross-Linking Reagents: Non-Hydrolyzable Nucleotide Photoaffinity Probes with Two Photoactive Groups J. Biol. Chem. 268, 14245-14253 (1993).

96. Trad, C., Chavan, A., Clemens, J., and Haley, B. Identification and Characterization of an NADH Binding Site of Prolactin with 2-Azido-NAD^+ Arch. Biochem. Biophys. 304, 58-64 (1993).

97. Chavan, A., Ensor, C., Wu, P., Haley, B. and Tai, H. Photoaffinity Labeling of Human Placental NAD^+-Linked 15-Hydroxyprostaglandin Dehydrogenase with $[\alpha^{32}P]$-$2N_3NAD^+$: Identification of a Peptide in the Adenine Ring Binding Domain J. Biol. Chem. 268, 16437-16442 (1993).

98. Chavan, A., Richardson, S., Kim, H., Haley, B. and Watt, D. Forskolin Photoaffinity Probes for the Evaluation of Tubulin Binding Sites Bioconjugate Chem. 4, 268-274 (1993).

99. Duhr, E.F., Pendergrass, J. C., Slevin, J.T., and Haley, B. HgEDTA Complex Inhibits GTP Interactions With The E-Site of Brain β-Tubulin Toxicology and Applied Pharmacology 122, 273-288 (1993).

100. Jayaram, B. and Haley, B. Identification of Peptides Within the Base Binding Domains of the GTP and ATP Specific Binding Sites of Tubulin. J. Biol. Chem. 269 (5) 3233-3242 (1994).

101. A. Chavan, B. Haley, D. Volkin, K. Marfia, A. Verticelli, M. Bruner, J. Draper, C. Burke and R. Middaugh. Interaction of Nucleotides with Acidic Fibroblast Growth Factor (FGF-1). Biochemistry 33,7193-7202 (1994).

102. Logan, J., Hiestand, D., Daram, P., Huang, Z., Muccio, D., Hartman, J., Haley, B., Cook, W., and Sorscher, E. Cystic Fibrosis Transmembrane Conductance Regulator Mutations That Disrupt Nucleotide Binding. J. Clin. Invest. 94, 228-236 (1994).

103. Olcott, M. and Haley, B. Identification of Two Peptides From the ATP-Binding Domain of Creatine Kinase. Biochemistry, 33, 11935-11941 (1994).

104. Bhattacharyya, A., Chavan, A., Shuffett, M., Haley, B. and Collins, D. Photoaffinity Labeling of Rat Liver Microsomal 5α-Reductase by 2-Azido-NADP$^+$. Steroids 59, 634-641 (1994).

105. Salvucci, M., Chavan, A., Klein, R., Rajagopalan, K. and Haley, B. Photoaffinity Labeling of the ATP Binding Domain of Rubisco Activase and a Separate Domain Involved in the Activation of Ribulose-1,5-Bisphosphate Carboxylase/Oxygenase. Biochemistry 33, 14879-14886 (1994).

106. Pendergrass, J.C. and Haley, B.E. Mercury-EDTA Complex Specifically Blocks Brain β-Tubulin-GTP Interactions: Similarity to Observations in Alzheimer"s Disease. pp98-105 in Status Quo and Perspective of Amalgam and Other Dental Materials (International Symposium Proceedings ed. by L. T. Friberg and G. N. Schrauzer) Georg Thieme Verlag, Stuttgart-New York (1995).

107. Doukas, M., Chavan, A., Gass, C., Nickel, P., Boone, T. and Haley, B. Inhibition of GM-CSF Activity by Suramine and Suramin Analogues is Correlated to Interaction with the GM-CSF Nucleotide Binding Site. Cancer Research 55:5161-5163 (1995).

108. Bhattacharyya, A. K., Chavan, A.J., Haley, B., Taylor, M.F., and Collins, D.C. Identification of the NADP(H) Binding Site of Rat Liver Microsomal 5α-Reductase (Isozyme-1): Purification of a Photolabeled Peptide Corresponding to the Adenine Binding Domain. Biochemistry 34, 3663-3669 (1995)

109. Chavan, A., Gass, C., Haley, B., Boone, T. and Doukas, M. A. Identification of N-Terminus Peptide of Human Granulocyte/Macrophage Colony Stimulating Factor as the Site of Nucleotide Interaction. Biochem. Biophys. Res. Commun. 208,#1 390-396 (1995).

110. Shoemaker, M., and Haley, B. Identification of the Adenine Binding Domain Peptides of the ADP Binding Site of Glutamate Dehydrogenase. Bioconjugate Chemistry 7, 302-310 (1996).

111. Rajagopalan, K., Pavlinkova, G., Levy, S., Pokkuluri, R., Schiffer, M., Haley, B., and Kohler, H. Novel Unconventional Binding Site in the Variable Region of Immunoglobulins. Proc. Natl. Acad. Sci. 93, 6019-6024 (1996).

112. Pavlinkova, G., Rajagopalan, K., Muller, S., Chavan, A., Sievert, G., Lou, D., O'Tolle, C., Haley, B., and Kohler, H. Site-Specific Photobiotinylation of Immunoglobins, Fragments and Light Chain Dimers. J. Immunological Methods 201, 77-88 (1997).

113. Pendergrass, J.C. and Haley, B.E. Inhibition of Brain Tubulin-Guanosine 5'-Triphosphate Interactions by Mercury: Similarity to Observations in Alzheimer's Diseased Brain. In Metal Ions in Biological Systems

V34, Mercury and Its Effects on Environment and Biology, Chapter 16. Edited by H. Sigel and A. Sigel. Marcel Dekker, Inc. 270 Madison Ave., N.Y., N.Y. 10016 (1996).

114. McGuire, M., Carroll, L. J., Yankie, L., Thrall, S. H., Dunaway-Mariano, D., Hertzberg, O., Jayaram, B. and Haley, B. Determination of the Nucleotide Binding Site within *Clostridium symbiosum* Pyruvate Phosphate Dikinase by Photoaffinity Labeling, Site-Directed Mutagenesis, and Structural Analysis. Biochemistry 35, 8544-8552 (1996).

115. Kohler, H., Pavlinkova, G., and Haley, B. Immunoglobulin Nucleotide Binding Site: A Possible Superantigen Receptor. In Human B Cell Superantigens, edited by Moncei Zouali, Chapter 13, pp 189-194 (1996).

116. Sankaran, B., Chavan, A. and Haley, B. Identification of Adenine Binding Domain Peptides of the $NADP^+$ Active Site within Porcine Heart $NADP^+$-Dependent Isocitrate Dehydrogenase. Biochemistry 35, 13501-13510 (1996).

117. Sankaran, B., Clemens, J., and Haley, B. A Comparison of Changes in Nucleotide-Protein Interactions in the Striatal, Hippocampus and Paramedian Cortex After Cerebral Ischemia and Reperfusion: Correlations to Regional Vulnerability. Molecular Brain Research 47, 237-250 (1997).

118. Hensley, K., Cole, P. ,Aksenov, M., Aksenova, M., Bummer, P.E., Carney, J.M., Haley, B.E., and Butterfield, D.A. Oxidatively-Induced Structural Alteration of Glutamine Synthetase Assessed by Analysis of Spin Label Incorporation Kinetics. J. of Neurochemistry 68, 2451-2457 (1997).

119. Pendergrass, J. C., Haley, B.E., Vimy, M. J., Winfield, S.A. and Lorscheider, F.L. Mercury Vapor Inhalation Inhibits Binding of GTP to Tubulin in Rat Brain: Similarity to a Molecular Lesion in Alzheimer's Disease Brain. Neurotoxicology 18(2), 315-324 (1997).

120. Olcott, M.C. and Haley, B.E. Identification of an Adenine-nucleotide Binding Site on Interferon-α2. Eur. J. Biochem. 247/3, 762-769 (1997).

121. David, S., Shoemaker, M., and Haley, B. Abnormal Properties of Creatine kinase in Alzheimer's Disease Brain: Correlation of Reduced Enzyme Activity and Active Site Photolabeling with Aberrant Cytosol-Membrane Partitioning. Molecular Brain Research accepted (1997).

RESEARCH PAPERS (ABSTRACTS)

1. Haley, B. and Yount, R. Inhibition of Myosin by Gamma-Fluoroadenosine Triphosphate, Abstracts Pacific Slope Biochemistry Conference, Seattle, Washington (1969).
2. Haley, B. Synthesis of Photoaffinity Analogs of ATP and AMP and Their Use as Membrane Probes. Mount Sinai School of Medicine & Rockefeller University School of Medicine, (Invited paper)(1974)
3. Haley, B. and Hoffman, J. Photoaffinity Labeling of ATP Binding Sites of Human Erythrocyte Membrane, FASEB Meeting, Atlantic City (1974).
4. Haley, B. Photoaffinity Labeling of cAMP Binding Sites of Human Erythrocyte Membranes, Abstracts 1975 ICN-UCLA Biochemistry Conference on Energy Transduction (1975).
5. Haley, B. Photoaffinity Labeling of Human Red Cell Membrane Binding Sites Using 8-Azido-cAMP, Abstracts 1975 FASEB Meeting, Atlantic City (1975).
6. Owens, J.R. and Haley, B. A Study of cAMP Stimulated Phosphorylation and cAMP Binding Sites of Human Erythrocyte Membrane Proteins using ^{32}P-8-Azido-cAMP, a Photoaffinity Probe. ICN-UCLA Conference on Molecular and Cellular Biology (1975).
7. Owens, J. and Haley, B. Properties of cAMP Binding Proteins of the Human Erythrocyte Membrane, Abstracts 1976 ICN-UCLA Biochemistry Conference on Cell Shape and Surface Architecture (1976).
8. Seery, V. and Haley, B. Activation of Glycogen Phosphorylase by 8-Azidoadenosine 5'-Monophosphate, Abstracts ASBC Meeting, San Francisco (1976).
9. Waterson, R. and Haley, B. Interactions of Photoaffinity AMP and ATP Analogs with E. coli Aminoacyl-tRNA Synthetases, Abstracts ASBC Meeting, San Francisco (1976).
10. Fletcher, P., Kaltenback, C. and Haley, B. Photoaffinity Labeling of Adenosine-3', 5' Cyclic Monophosphate Binding Sites in Ovine Corpus Lutea. Abstracts, Society for the Study of Reproduction, Philadelphia, Pennsylvania (1976).
11. Geahlen, R.L., Moore, V.G., Kaiser, I.I. and Haley, B.E. Synthesis and Biological Activity of Photoactive 8-Azidoguanosine Nucleotide Analogs. Abstracts, 1977 FASEB Meeting, Chicago (1977).
12. Owens, J. and Haley, B. Mechanism of Action of Membrane Bound cAMP Activated Protein Kinase. 1977 ICN-UCLA Conference on Molecular Aspects of Membrane Transport (1977).
13. Hahn, G.L., Metz, K.W., Atherton, R.W. and Haley, B.E. Labeling of a Surface Cyclic-AMP Receptor Site on Rabbit Sperm Utilizing a Photoaffinity Analog. American Society of Andrology, Nashville, Tennessee (1978).
14. Owens, J. and Haley, B.E. Mechanism of Mg-ATP Regulation of Membrane Bound Type 1 cAMP Activated Protein Kinase, Transmembrane Signaling, ICN-UCLA Symposia (1978).
15. Czarnecki, J. and Haley, B. Interaction of 8-Azido-2'-Deoxyadenosine-5'-Triphosphate, A Photoaffinity Label, with a DNA-Dependent DNA Polymerase. ASBC Meeting, Atlanta (1978).
16. Hoyer, P.B. and Haley, B.E. Partial Characterization of Rat Brain cAMP Binding Proteins: Cellular Location, Molecular Weights, and Nucleotide Effects. 1979 ICN-UCLA Conference on Covalent Modification of Proteins (1979).
17. Schoff, P., Atherton, R.W. and Haley, B.E. A Study of the cAMP Receptor Proteins of Human Ejaculated Sperm Using a Photoaffinity Analog. 1979 Soc. Study of Reproduction (1979).
18. Briggs, F.N., Al-Jumaily, W. and Haley, B.E. Interactions of the Photoaffinity Analog of ATP, 8-Azido-ATP, 8-Azido-ATP, with Vesicles of Skeletal and Cardiac Sarcoplasmic Reticulum (1980).
19. Hoyer, P.B. and Haley, B.E. Use of Photoaffinity Probes to Study cAMP Dependent Membrane Partitioning of ATP Binding and Phosphorylated Proteins (1980).
20. Owens, J.R. and Haley, B.E. Photoaffinity Labeling of Guanosine Polyphosphate (Magic Spot) Binding Proteins. Fed. Proc. 40, St. Louis, Missouri (1981).
21. Khatoon, S., Schoff, P.L., Haley, B.E. and Atherton, R.W. A Comparative Study of Sperm cAMP Dependent Protein Kinases by a Photoaffinity Analysis. American Society of Andrology Meeting, New Orleans, Louisiana (1981).
22. Woody, A-Young, M., Vader, C.R., Reisbig, R.R., Woody, R.W. and Haley, B.E. Photoaffinity Labeling of DNA-dependent RNA Polymerase from E. coli with 8-Azido-Adenosine 5'-Triphosphate. Biophysical Society Meeting, Denver, Colorado (1981).
23. Schoff, P.K., Khatoon, S., Haley, B.E. and Atherton, R.W. Protein Kinases: Control by Ca and cAMP in Rat Caudal Epididymal Sperm. American Society of Andrology Meeting, New Orleans, Louisiana (1981).
24. Kaiser, I.I., Moore, V.G., Van Kirk, E. and Haley, B.E. The Enzymatic Synthesis of an 8-Azido-Adenosine-Containing Analog of OS-adenosylmethionine. Fed. Proc. 40, St. Louis, Missouri (1981).

25. Hoyer, P.B. Phosphorylation of the cAMP Dependent Protein Kinases Catalytic Subunit Inhibits Phosphorylation of Endogenous Substrates. Fed. Proc. 40, St. Louis, Missouri (1981).
26. Haley, B.E. and Al-Jumaily, W. Utilization of Nucleotide Probes to Study Adenylyl Cyclase in Biological Membranes. 1982 UCLA Symposium: "Evolution of Hormone-Receptor Systems", Squaw Valley, California (1982).
27. Khatoon, S., Haley, B.E. and Atherton, R.W. A Photolabeling Analysis of the cAMP-Dependent Protein Kinase Regulatory Subunits in Sea Urchin and Rat Sperm. Society for the Study of Reproduction, Madison, Wisconsin (1982).
28. Owens, J.R. and Haley, B.E. Labeling of Nucleotide Binding Sites in *E. coli* and *B. subtilis* with "Magic Spot" Photoaffinity Analogs. FASEB Meeting, New Orleans, Louisiana (1982).
29. Owens, M., Haley, B.E. and Barden, R.E. Photolibile Multisubstrate Analogues as Photoaffinity Probes for Adenylate Kinase: Synthesis and Kinetic Studies. FASEB Meeting, New Orleans, Louisiana (1982).
30. Haley, Boyd. Utilization of Nucleotide Photoaffinity Probes to Study Adenylyl Cyclase and Protein Kinases in Biological Systems. 12th International Congress of Biochemistry. Perth, Australia (1982).
31. Khatoon, S., Atherton, R. and Haley, B. Studies on Rat Epidimal Sperm Phosphorylating Systems Using Nucleotide Photoaffinity Analogs. ASBC Meetings, San Francisco, California (1983).
32. Haley, B., Hoyer, P. and Middaugh, C.R. Studies on Adenylyl Cyclase Using Fluorescent and Photoaffinity GTP Analogs. ASBC Meeting, San Francisco, California (1983).
33. Owens, M., Barden, R. and Haley, B. Labeling of the Active Site of Adenylate Kinase Using a Multisubstrate Photoaffinity Probe. ASBC Meetings, San Francisco, California (1983).
34. Owens, J., Woody, A.-J. and Haley, B. Photoaffinity Labeling of RNA Polymerase with [5'-^{32}P] 8-Azidoguanosine-3'-phosphate-5'-phosphate, A Transcriptional Inhibitor. ASBC Meeting, San Francisco, California (1983).
35. Middlebrook, J.L., Evans, G.R., Smith, L.A. and Haley, B.E. Interaction of Azido-ATP with Botulinum Neurotoxin. 3rd International Congress on Cell Biology (1984).
36. Khatoon, S. and Haley, B.E. Autophosphorylation of cAMP Dependent Protein Kinase Catalytic Subunit Inhibits its Ability to Bind Nucleotide Triphosphates. ASBC Meeting, St. Louis, Missouri (1984).
37. Karpel, R.L., Levin, V.Y. and Haley, B.E. Photoaffinity Labeling of a Nucleic Acid Helix-Destabilizing Protein. USLA Symposia on Protein Structure, Folding and Design (1985).
38. Haley, B.E., Evans, R.K. and Roth, D.A. Studies on Viral Induced Nucleotide Binding Proteins in Tobacco. ASBC Meetings, Anaheim, California (1985).
39. Evans, R.K., Johnson, J.D. and Haley, B.E. Synthesis of 5-azido-2'-deoxyuridine-5'-triphosphate: Enzymatic Incorporation into DNA. ASBC Meetings, Anaheim, California (1985).
40. Duhr, E., Leppla, S.H. and Haley, B. Studies on Bacillus anthracis and Staphyloccoccal Protein Toxins Using Nucleotide Photoaffinity Analogs. ASBC Meetings, Anaheim, California (1985).
41. Francis, B., Mackenzie, III, C.W. and Haley, B.E. Photoaffinity Labeling and Phosphorylation Studies of cGMP Dependent Protein Kinase. ASBC Meetings, Anaheim, California (1985).
42. Toner, J.A., Haley, B. and Taylor, S.J. Scoichiometric Autophosphoration of the Catalytic Subunit of cAMP-dependent Protein Kinase II. ASBC Meetings, Anaheim, California (1985).
43. Khatoon, S., Haley, B. and Coleman, M.S. Interactions of Deoxynucleotide Photoaffinity Analog with Terminal Deoxynucleotidyl Transferase (TdT). ASBC Meetings, Anaheim, California (1985).
44. Shi, Q.H., Ruiz, J., Ho, R.J. and Haley, B.E. Evaluation of Inhibition of Forskolin-activated Adenylate Cyclase by GDP or TNP-GTP. ASBC Meetings, Anaheim, California (1985).
45. Khatoon, S., Beach, C., Haley, B. and Coleman, M.S. Active Site Characterization of Terminal Deoxynucleotidyl Transferase (TdT): Modification with Deoxynucleotide Photoaffinity Analogs. ASBC Meetings, Washington, D.C. (1986).
46. Karpel, R.L., Levin, V.Y. and Haley, B. Characterization of a Crosslinked Nucleic Acid: Helix Destabilizing Protein Complex. ASBC Meetings, Washington, D.C. (1986).
47. Khatoon, S., Haley, B.E. and Slevin, J.T. Decreased Availability of the Exchangeable GTP Binding Site of the β-Subunit of Brain Tubulin in Alzheimer's Disease. AAN Scientific Program, New York, New York (1987).
48. Lewis, C., Haddad, R., Carlson, G.M. and Haley, B.E. Photoaffinity Labeling of Phosphoenolpyruvate Carboxykinase (GTP) by 8-Azido-GTP. ASBC Meetings, Philadelphia, Pennsylvania (1987).
49. Kim, H., Ponstingl, H. and Haley, B.E. Identification of the Guanosine Interacting Peptide of the GTP Binding Site of β-Tubulin Using $8N_3GTP$. ASBC Meetings, Philadelphia, Pennsylvania (1987).
50. Khatoon, S., Slevin, J.T. and Haley, B.E. GTP Binding to the β-Subunit of Tubulin is Greatly Reduced in Alzheimers Disease. ASBC Meetings, Philadelphia, Pennsylvania (1987).
51. Campbell, S.R., Khatoon, S., Haley, B.E. and Slevin, J.T. Inability of Brain Microtubules in Alzheimers Disease to Cold-Depolymerize. Neuroscience Meeting, New Orleans, Louisiana (1987).

52. Ho, L.T., Nie, Z.M., Mende, T.J., Richardson, S., Lee, H., Watt, D.S., Haley, B.E. and Ho, R.J. Photoaffinity-Analogs of Forskolin and their Effects on Adenylate Cyclase. APS Meeting, San Diego, California (1987).
53. Li, S.W., Sobol, R.W., Kariko, K., Haley, B.E. and Suhadolnik, R.J. Photoaffinity Labeling of 2-5A Synthetase by 2- and 8-azido-ATP. FASEB Meeting, Las Vegas, Nevada (1988).
54. Francis, B.R. and Haley, B.E. Regulation of Protein Phosphorylation in Colon Carcinoma Homogenates by Metabolic Products of Glycolysis and IP_3. FASEB Meeting, Las Vegas, Nevada (1988).
55. Drake, R.R., Evans, R.K. and Haley, B.E. Synthesis and Properties of 5-azido-UDP-glucose, an Active Site-directed Photoaffinity Probe. FASEB Meeting, Las Vegas, Nevada (1988).
56. Nie, Z.M., Ho, L.T., Lee, D.S., Bowdan, J.B., Mende, T.M., Watt, D.S., Haley, B.E. and Ho, R.J. Photoaffinity Analogs of Adenylate Cyclase Activator, Forskolin. FASEB Meeting, Las Vegas, Nevada (1988).
57. Salvucci, M.E. and Haley, B.E. Photoaffinity Labeling of the Large and Small Subunits of Ribulose Bisphosphate Carboxylase with 8-Azido-ATP. Plant Physiology (1988).
58. Droms, K.A., Smith, G.J., Malkinson, A.M. and Haley, B.E. $G_s\alpha$ and Lung Epithelial Cell Growth. American Association for Cancer Research Meeting, Miami, Florida (1988).
59. Lewis, C.T., Haley, B.E. and Carlson, G.M. Evidence for Formation of a Transient Sulfenamide Bond During Photoaffinity Labeling by 8-Azido-GTP of Phosphoenolpyruvate Carboxykinase. American Chemical Society, San Diego, California (1988).
60. Chavan, A.J., Watt, A.J., Kim, H. and Haley, B.E. Synthesis and Application of GTP Phosphonamide Photoaffinity Reagents. American Chemical Society Meeting, Los Angeles, California (1988).
61. Lee, H., Watt, D.S., Kim, H. and Haley, B.E. Synthesis and Application of a Forskolin Photoaffinity Probe to a Tubulin Binding Site. American Chemical Society Meeting, Atlanta, Georgia (1988).
62. Drake, R.R. and Haley, B.E. Covalent Labeling of Phosphoglucomutase by [^{32}P]UDP-GLC AND [^{32}P]5N_3UDP-GLC. ASBMB Meeting, Los Angeles, California (1989).
63. Watt, D.S., Lee, H.-W., Kim, H.-T. and Haley, B.E. Detection of a Forskolin Binding Site Using a Photoaffinity Probe. ASBMB Meeting, Los Angeles, California (1989).
64. Dholakia, J.N., Francis, B.R., Haley, B.E. and Wahba, A.J. Characterization of the Guanine Nucleotide Exchange Factor as a GTP Binding Protein. ASBMB Meeting, Los Angeles, California (1989).
65. Parker, K.W., Drake, R.R., Haley, B.E. and Salvucci, M.E. Photoaffinity Labeling of Tobacco Subcellular Fractions with [^{32}P]-Azido-UDP-Glucose. ASPP/CSPP Toronto, Ontario, Canada (1989).
66. Campbell, S., Kim, H., Haley, B.E. and Doukas, M. Photoaffinity Labeling of Nucleotide Binding Sites on Interleukin-2. Second International Workshop on Cytokines. Hilton Head, North Carolina (1989).
67. Wasserman, B.P., Frost, D.J., Wu, A., Read, S.M., Drake, R.R. and Haley, B.E. Identification of the UDPG-Binding Polypeptide of (1,3)-β-Glucan Synthase of Higher Plants by Photoaffinity Labeling with 5-Azido-UDPG. Fifth Cell Wall Meeting, Edinburgh (1989).
68. Gunnersen, D.J., Slevin, J.T. and Haley, B.E. Novel Proteins in Alzheimer's Diseased Brain May be Due to Pathological Modification of β-Tubulin. ASBMB Meeting, New Orleans, Louisiana (1990).
69. Drake, R., Hiestand, D., Sharp, J. and Haley, B. Nucleotide Binding and Autophosphorylation Properties of IL-1β. ASBMB Meeting, New Orleans, Louisiana (1990).
70. Kim, H. and Haley, B. Identification of Active Site Peptides of Glutamate and Lactate Dehydrogenases by Photoaffinity Labeling. ASBMB Meeting, New Orleans, Louisiana (1990).
71. Lin, P.P-C., Shoemaker, M.T. and Haley, B.E. Observation of a Specific Nucleotide Binding Site on Glucagon by Photoaffinity Labeling with Azido-GTP. ASBMB Meeting, New Orleans, Louisiana (1990).
72. Olcott, M. and Haley, B. Identification of a Nucleotide Binding Site on Interferon-α. ASBMB Meeting, New Orleans, Louisiana (1990).
73. Campbell, S., Kim, H., Hiestand, D. and Haley, B. Photoaffinity Labeling of Nucleotide Binding Sites on Tumor Necrosis Factor. ASBMB Meeting, New Orleans, Louisiana (1990).
74. Duhr, E., Slevin, J. and Haley, B. Low Level HgEDTA Complex Specifically Blocks [^{32}P]8N_3GTP Interaction with Human Brain Tubulin. ASBMB Meeting, New Orleans, Louisiana (1990).
75. Mann, D.M., Haley, B.E. and Greenberg, R.N. GTP Binding to Atrial Natriuretic Factor as Determined by Photoaffinity Labeling with [γ-^{32}P]8N_3GTP. ASBMB Meeting, New Orleans, Louisiana (1990).
76. Droms, K.A., Haley, B.E. and Malkinson, A.M. Mechanism of Decreased β-Adrenergic Stimulation of Adenylate Cyclase in Neoplastic Mouse Lung Epithelial Cell Lines. FASEB Meeting, Washington, D.C. (1990).
77. Manning, E.L., Kim, H., Haley, B.E. and Jacobson, M.K. Utilization of 2-Azido-NAD for Studies of ADP-Ribose Polymer Metabolism. ASBMB Meeting, New Orleans, Louisiana (1990).

78. Watt, D.S., Chavan, A.J., Kim, H.-T. and Haley, B.E. A Novel GTP Photoaffinity Probe for the Identification of the Exchangeable GTP-Binding Domain in Tubulin. ASBMB Meeting, New Orleans, Louisiana (1990).
79. Doukas, M., Chavan, A.J., Campbell, S. and Haley, B.E.Photolabeling of the Granulocyte/Macrophage-Colony StimulatingFactor (GM-CSF) Eliminates Its Biological Activity. FASEBMeeting, Atlanta, Georgia (1991), FASEB J., 5 (4), A424.
80. Duhr, E., Pendergrass, C., Kasarskis, E., Slevin, J. and Haley, B.E. Hg^{2+} Induces GTP-Tubulin Interactions in Rat Brain Similar to those Observed in Alzheimer's Disease. FASEB Meeting, Atlanta, Georgia (1991), FASEB J., 5, (4), A456.
81. Trad, C.H., Chavan, A.J. and Haley, B.E. Detection of an NAD^+/NADH Binding Site on Prolactin Using [^{32}P]2$N_3$$NAD^+$. FASEB Meeting, Atlanta, Georgia (1991), FASEB J., 5, (4), A795.
82. Shoemaker, M.T., Jayaram, B. and Haley, B.E. Glucagon-GTP Interactions: Identification of a Binding Domain Peptide. FASEB Meeting, Atlanta, Georgia (1991), FASEB J., 5, (4), A795.
83. Jayaram, B., Sankaran, B., Watt, D.S. and Haley, B.E. Synthesis and Use of Radiolabeled, Non-Hydrolyzable GTP Photoaffinity Probes. FASEB Meeting, Atlanta, Georgia (1991), FASEB J., 5, (6), A1508.
84. Campbell, S., Doukas, M. and Haley, B.E. Identification of the [α-^{32}P]8-Azido-ATP Photolabeled Peptides of rhIL-2. FASEB Meeting, Atlanta, Georgia (1991), FASEB J., 5, (6), A1521.
85. Gunnersen, D.J., Slevin, J.T. and Haley, B.E. Preliminary Characterization of a Novel Alzheimer's Disease Associated Protein. FASEB Meeting, Atlanta, Georgia (1991), FASEB J., 5, (4), A456.
86. Hiestand, D.M., Haley, B.E. and Kindy, M.S. Nucleotide Binding and Phosphorylation Properties of Proteins from Control and Ischemic Brains. FASEB Meeting, Atlanta, Georgia (1991), FASEB J., 5, (4), A458.
87. Rajagopalan, K., Chavan, A.J., Haley, B.E. and Watt, D.S. Bidentate GTP Photoaffinity Probes: Cross-Linking Agents with Two Photoactive Groups. FASEB Meeting, Atlanta, Georgia (1991), FASEB J., 5, (6), A1522.
88. Bradley, M., Olcott, M. and Haley, B. Characterizaton of the ATP Binding Domain of Creatine Kinase Using Photoaffinity Probes. ASBMB Meeting, Houston, Texas (1992)
89. Doukas, M., Chavan, A., Boone, T., Gass, C. and Haley, B. Nucleotide Binding Site of Granulocyte/Macrophage-Colony Stimulating Factor (GM-CSF) is Preserved Across Species Barriers. ASH Annual Meeting, Anaheim, California (1992)
90. Sankaran, B., Haley, B. and Clemens, J. Identification of Changes in Nucleotide Interacting Proteins in Control vs Ischemic Rat Brains. Society for Neuroscience Meeting, Anaheim, California (1992)
91. Gunnersen, D., and Haley, B. Detection of Glutamine Synthetase in the CSF of Alzheimer's Diseased Patients: A Potential Diagnostic Biochemical Marker. Society for Neuroscience Meeting, Anaheim, California (1992)
92. Hiestand, D., Cha]van, A. and Haley, B. Identification of a Nucleotide Binding Domain on Recombinant Human IL-1β. FASEB Meeting, New Orleans, Louisiana (1993)
93. Olcott, M., Haley, B. Identification of Two Peptides in the Adenine Binding Domain of Creatine Kinase Using Immobilized Al^{3+} Affinity Chromatography. FASEB Meeting, New Orleans, Louisiana (1993)
94. Rajagopalan, K., Chavan, A., Haley, B., and Watt, D. Synthesis and Application of Bidentate Nucleotide Photoaffinity Cross-linking Reagents with Two Photoactive Groups. FASEB Meeting, New Orleans, Louisiana (1993)
95. Shoemaker, M., and Haley, B. Identification of the Adenine Binding Domain of ADP Regulatory Site within GDH. FASEB Meeting, New Orleans, Louisiana (1993)
96. Chavan, A., Doukas, M., Gass, C., Haley, B. and Boone, T. Covalent Linkage of [α^{32}P]ATP or [γ^{32}P]ATP to rmGM-CSF in the Absence of Light. FASEB Meeting, New Orleans, Louisiana (1993)
97. Doukas, M., Chavan, A., Gass, C., Boone, T. and Haley, B. Nucleotide Binding Sites of Human and Murine Granulocyte/Macrophage-Colony Stimulating Factor (GM-CSF) are Identical. FASEB Meeting, New Orleans, Louisiana (1993)
98. Pendergrass, J., Duhr, E., Slevin, J., and Haley, B. meso-2, 3-Dimercaptosuccinic (DMSA) Acid to both Alzheimer's Diseased (AD) Brains and to HgEDTA Treated Control Brains. FASEB Meeting, New Orleans, Louisiana (1993)
99. Sorscher, E.J., Daram, P., Hiestand, D., Huang, Z., Peng, S., Muccio, D., Haley, B., and Logan, J. Mutations in CFTR Nucleotide Binding Domains (NBD's) Disrupt Trinitrophemyl ATP Binding. FASEB Meeting, New Orleans, Louisiana (1993).
100. Logan, J., Hiestand, D., Huang, Z., Muccio, D., Haley, B., and Sorscher, E. 3-Isobutyl-1-methylxanthine (IBMX) Blocks Binding of ATP Analogs to the CFTR First Nucleotide Binding Domain (NBD-1). FASEB Meeting, New Orleans, Louisana (1993).

101. Rajagopalan, K., Chavan, A.J., Cockle, S., Haley, B. and Watt, D. Identification of ATP-γ-Phosphate Binding Domain of Pertussis Toxin By Photoaffinity Labeling. FASEB Meeting, New Orleans, Louisiana (1993).
102. Kasarskis, E, Haley, B., and Gunnerson, D. GTP-binding Proteins in Amyotrophic Lateral Sclerosis Cerebrospinal Fluid. Abstracts American Neurological Assoc., Ann. Neurology 34, 297 (1993).
103. Pendergrass, J., Duhr, E., Haley, B., and Slevin, J. Effect of Chronic Ingestion of Micromolar $HgCl_2$ and HgEDTA Complex on Rodent Neuronal Cytoskeleton. Society for Neuroscience 23rd Annual Meeting, Abstracts, p193, #81.6 Washington, DC (1993).
104. Haley, B., Duhr, E., and David, S. Identification of an 8-Hydroxyguanosine Nucleotide in CSF that Blocks GTP Binding to β-Tubulin. Abstracts Annual Meeting Soc. For Neuroscience (1994).
105. Shoemaker, M., and Haley, B. Creatine Kinase is Generally Depleted and Inactive in Alzheimer's Diseased Brain. ASBMB Abstracts, FASEB J. 8, #7 (1994)
106. Sankaran, B., and Haley, B. Identification of the Coenzyme Binding Site of $NADP^+$-Dependent Isocitrate Dehydrogenase. ASBMB Abstracts, FASEB J. 8, #7 (1994).
107. Hiestand, D., Sorscher, E., and Haley, B. Use of $2N_3ATP$ to Identify the Site of ATP Interaction on Nucleotide Binding Domain-2 From the Cystic Fibrosis Transmembrane Conductance Regulator. ASBMB Abstracts, FASEB J. 8, #7 (1994).
108. Hiestand, D., Sorscher, E., Huang, Z., Wang, Y., and Haley, B. Use of 2N3ATP to Identify the Site of ATP Interaction on Nucleotide Binding Domain-2 From the Cystic Fibrosis Transmembrane Conductance Regulator. Abstracts 8th Annual N. American Cystic Fibrosis Conference, Orlando, FL (1994).
109. Kohler, H., Pavlinkova, G., Rajagopalan, K., Wang, H-T., Chatterjee, S., and Haley, B. Specific Photoaffinity Labeling Locus on Antibodies: Use for Chelation, Protein Conjugation and Gene Delivery. Abstracts Annual meeting Exper. Biol., Anaheim, CA, FASEB J. 8, #4 pA236 (1994)
110. Lorscheider, F., Vimy, M., Pendergrass, J., and Haley, B. Toxicity of Ionic Mercury and Elemental Mercury Vapor on Brain Neuronal protein Metabolism. Abstracts 12th Intern. Neurotoxicology Conf. Univ. Arkansas Med. Ctr., Hot Springs, AR (1994).
111. Lorscheider, F., Vimy, M., Pendergrass, J. and Haley, B. Mercury Vapor Exposure Inhibits Tubulin Binding to GTP in Rat Brain: A Molecular Lesion Also Present in Alzheimer's Diseased Brain. Expt. Biol. Annual Meeting Abstracts, Atlanta, GA, FASEB J. 9, #4 pA663 (1995)
112. Chavan, A., Doukas, M., Gass, C., Haley, B., and Collins, D. Inhibition of Nucleotide Binding to Recombinant GM-CSF by Suramin and it's Analogs Correlates with Inhibition of Biological Activity. Annual ASBMB Meeting, San Francisco, CA FASEB J. 9, #6 pA1417 (1995).
113. Lorscheider, F., Vimy, M., Pendergrass, J., and Haley, B. Mercury Vapor Inhalation inhibits Binding of GTP to Tubulin in Rat Brain: A Molecular Lesion Present in Alzheimer's Diseased Brain. 25th Annual meeting of Society for Neuroscience, San Diego, CA Soc. Neurosci. 21, #3, p1723 (1995).
114. Hicks, R., Pendergrass, J. and Haley, B. Identification of the Guanine Binding Domain Peptide of Myelin Basic Protein Using $[^{32}P]8N_3GTP$. Abstracts PGSRM Meeting, Madison, WI (1995).
115. Pendergrass, J., Israel, M., and Haley, B. Use of Photoaffinity Labeling and 2-D Electrophoresis to Identify Changes in Nucleotide Binding Proteins in Brain and CSF: A Potential Diagnostic Technique for Neurological Diseases. Annual Meeting AAPS Miami, FL (1995)
116. Hicks, R., Pendergrass, J., and Haley, B. Identification of the Guanine Binding Domain peptide of Myelin Basic Protein Using $[^{32}P]8N_3GTP$. Annual Meeting AAPS Miami, Fl. (1995).
117. Pendergrass, J., Isarel, M., Borths, C., Chavan, A., and haley, B. Detection of Multiple Cytodines and Growth Factors in Human CSF Using Photochemistry. 6th International Congress on Cell Biology & 36th Amer. Soc. Cell Biol. Annual Meeting, San Francisco, CA (1996).
118. Kohler, H., Pavlinkova, G., Sievert, G., Freeman, J., and Haley, B. Tumor-Targeting of Oligonucleotides Using Affinity Linked Antibodies. Abstracts FASEB Meeting, New Orleans, Louisiana, FASEB J. 10, #6 pA1350 (1996).
119. Chavan, A., Doukas, M., Gass, C., Boone, T., and Haley, B. Probing Anti-Growth Factor Activity of Suramin Using Azido Nucleotides. 6th International Congress on Cell Biology & 36th Amer. Soc. Cell Biol. Annual Meeting, San Francisco, CA (1996).
120. Doukas, M., Chavan, A., Gass, C., Boone, T., Nickel, P., and Haley, B. Suramin and Suramin Analog Activity Against Leukemic Cell Lines: Correlation to Interaction with the Granulocyte/Macrophage Colony Stimulating Factor Nucleotide-Binding Site. Abstracts AACR Meeting (1996).

Boyd Haley

CURRICULUM VITAE

The basic research interest of our laboratory centers on biochemical and biomedical problems involving control at the molecular level. Specifically, we are most interested in biological systems regulated by protein-nucleotide interactions where the bioenergetics involved are expressed through site-specific nucleotide binding of high affinity or through protein substrate phosphorylation. Our approach to the study of this general phenomenon is to synthesize novel nucleotide analogs that are photoactive or fluorescent, or both. The analogs are then used to study various aspects of protein-nucleotide interactions which regulate enzyme activity. Analogs used may be modifications of the commonly known nucleotides such as ATP, cAMP, GTP, dUTP, NAD^+, UDP-Glc, etc. or probes of the more unusual nucleotides such as the proposed alarmones guanosine-3'-phosphate-5'phosphate (magic spot compounds) and diadenosine-P^1, P^4-tetraphosphate.

These nucleotide analogs are used to study a wide variety of enzymes that either use or are regulated by nucleotides including cyclases, kinases, and polymerases. Certain of these probes have proven useful in the study of the differences between normal and diseased tissues as observed through changes in nucleotide binding proteins. Alzheimer's disease, Amyotrophic Lateral Sclerosis and Multiple Sclerosis are some of the diseases we are currently investigating. I am currently interested in the several low molecular weight nucleotide binding proteins that we have detected in human cerebrolspinal fluid that seem to vary in presence and concentration with various disease states. One of these is aFGF (binds ATP) and another is myelin basic protein (binds GTP, is phosphorylated and ADP-ribosylated).

We have also done studies that implicate low levels of Hg as being capable of being involved in certain neurological diseases. This is based on our observation that Hg^{2+} chelated with EDTA is a more potent inhibitor of tubulin polymerization than is free Hg^{2+}. Addition of Hg-EDTA complex to non-demented human brain homogenates renders the photolabeling profile to be identical to that of Alzheimer's diseased brain homogenates. Further, exposure of rats to low level mercury vapor causes a great increase in rat brain mercury levels and a marked decrease in brain tubulin photolabeling as is observed in Alzheimer's diseased brain. These results support the contention that mercury vapor would exacerbate the symptoms associated with Alzheimer's disease. This is a major concern since substantial levels of mercury vapor is known to be released from dental amalgams and EDTA is a common food additive.

Additionally, we have found that several of the large polypeptide hormones (or biological response modifiers) have nucleotide binding sites. These include GM-CSF, aFGF,IL-1, IL-2, Interferon-alpha, TNF (tumor necrosis factor), glucagon and GH (growth hormone). We therefore feel that the transmembrane signaling effected by these proteins may, at least be expressed partially by an activity associated with the "hormone" itself. This is supported by the observation that IL-1 and IL-2 also autophosphorylate using ATP.