

Dr. Jack Kall, DMD, FAGD, MIAOMT, received his doctorate in dental medicine (DMD) degree in 1977 from the University of Louisville School of Dentistry. For the next 25 years he served as Dental Director of the Family Health Centers, Inc., a federally qualified community public health center in Louisville, KY. Additionally, he founded Dental Health Center, his private practice focusing on biological, biocompatible dentistry.

Dr. Kall is a Fellow of the Academy of General Dentistry and a past President of the Kentucky chapter. He is an Accredited Master of the International Academy of Oral Medicine and Toxicology (IAOMT) and since 1996 has served as the Chairman of its' Board of Directors. He also serves on the Bioregulatory Medical Institute's (BRMI) Board of Advisors. He is a member of the Institute for Functional Medicine and American Academy for Oral Systemic Health and has presented to many groups about biological dentistry and occupational safety in dental facilities.

In 2012 upon invitation of the Philippines's Secretary of Health he gave the presentation "Mercury-free Dentistry in Public Health" at the national conference: Philippines—Towards mercury-free Dentistry.

In 2013 Dr. Kall co-authored "International Academy of Oral Medicine & Toxicology (IAOMT) Position Statement against dental mercury amalgam fillings for medical and dental practitioners, dental students and patients". He co-authored a chapter about the health risks of mercury exposure from amalgam fillings in the textbook titled: "Epigenetics, the Environment, and Children's Health across Lifespans" published in 2016.

In 2017 he co-authored "International Academy of Oral Medicine and Toxicology (IAOMT) Position Paper against Fluoride Use in Water, Dental Materials, and, Other Products for Dental and Medical Practitioners, Dental and Medical Students, Consumers, and Policy Makers".

John C. Kall, DMD, FAGD, MIAOMT
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Louisville, Kentucky, USA
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1977 Graduate of the University of Louisville School of Dentistry **DMD** degree

1977-present. License to practice dentistry in Kentucky. #4715

1977-present. Member of the American Dental Association, Kentucky Dental Association, Louisville Dental Society

1977-2002 Dental Director of Family Health Centers, (Community Health Center), Department of Public Health, Louisville, KY (Discontinued use of mercury amalgam at this public health facility in 1983.)

1977-present. Dental Health Center, (Founder—Private Practice), Louisville, KY (Discontinued use of mercury amalgam at this private office in 1983.)

1981-present. Member of the Academy of General Dentistry

1985-present. Member of the International Academy of Oral Medicine & Toxicology

1988-present. Board of Directors, International Academy of Oral Medicine & Toxicology

1991 Fellow of Academy of General Dentistry **FAGD**

1993-1994 President of Kentucky Chapter of Academy of General Dentistry

1994 Fellow of International Academy of Oral Medicine & Toxicology **FIAOMT**

1996-present. Chairman, Board of Directors, International Academy of Oral Medicine & Toxicology

2006 Master of International Academy of Oral Medicine & Toxicology **MIAOMT**

2010 Testified against the use of mercury fillings at the FDA's Dental Products Panel
<https://www.youtube.com/watch?v=0OJ0iqTIBPY&list=PLP7zrwgvFqPICAGcutrSnUC1zGlfP8KOD&index=26&t=0s>

2012 Upon invitation of the Philippines's Secretary of Health gave the presentation
"Mercury-free Dentistry in Public Health" at the national conference in
Manila: Philippines—Towards mercury-free Dentistry

2013 Co-authored **"International Academy of Oral Medicine & Toxicology
(IAOMT) Position Statement against dental mercury amalgam fillings for
medical and dental practitioners, dental students and patients"**.
<https://iaomt.org/iaomt-position-paper-dental-mercury-amalgam-2/>

2016 Co-authored the chapter **"What is the risk? Dental amalgam, mercury exposure,
and human health risks throughout the lifespan"** in the book **"Epigenetics,
the Environment and Children's Health across Lifespans"** published by
Springer in 2016. https://link.springer.com/chapter/10.1007/978-3-319-25325-1_7

2017 Poster presentation **"What is the risk? Dental amalgam, mercury exposure, and
human health risks throughout the lifespan"** from our book chapter in
"Epigenetics, the Environment and Children's Health across Lifespans"
published by Springer in 2016.
Given at the 2017 International Conference on Mercury as a Global Pollutant,
Providence, RI MP-131 <http://mercury2017.com/program/technical-program/p3e/>

2017 Gave presentation **"Workplace Safety – Enhanced Protection Protocols"** 2017
Kentucky Dental Association meeting. [https://www.kyda.org/ce-course-
details.html?id=9](https://www.kyda.org/ce-course-details.html?id=9)

2017 Co-authored **"International Academy of Oral Medicine and Toxicology
(IAOMT) Position Paper against Fluoride Use in Water, Dental Materials,
and, Other Products for Dental and Medical Practitioners, Dental and Medical
Students, Consumers, and Policy Makers."** [https://iaomt.org/iaomt-fluoride-
position-paper-2/](https://iaomt.org/iaomt-fluoride-position-paper-2/)

2018 Designated Emeritus member of the Academy of General Dentistry

2018 Appointed to the Bioregulatory Medical Institute's (BRMI) Board of Advisors.

2018 Gave presentations **"Overview of Biological Dentistry"** and **"Safe Mercury
Amalgam Removal Technique—SMART Protocol"** at the Bioregulatory
Medical Institute Conference, May 11-12, 2018, Louisville, KY
<https://www.youtube.com/watch?v=ACfipNSdWLS&feature=youtu.be>
<https://www.youtube.com/watch?v=JdYmsjEKC4&feature=youtu.be>

2018-present. Member of the Institute for Functional Medical

2019-present. Member of the American Academy for Oral Systemic Health

2019 Testified against the use of mercury fillings at the FDA's meeting of the
Immunology Devices Panel of the Medical Devices Advisory Committee

https://www.youtube.com/watch?time_continue=9&v=OGiNIhAAcI8&feature=emb_logo

2019 Gave presentation "**Who do we need to be?**" at the joint meeting of the American Academy for Oral and Systemic Health and the American Academy of Physiological Medicine & Dentistry, October 17, 2019, Nashville, TN

<https://www.acam.org/mpage/2019AAPMDSpeaker-MedTalksPart1>

Short Biography of Dr. Boyd Haley

Dr. Haley received his BS in Chemistry/Physics from Franklin College of Indiana in 1963. From 1964 to 66 he served as a medic in the U.S. Army. He obtained his M.S. in Chemistry at the University of Idaho (1967) and his Ph.D. in Chemistry/Biochemistry at Washington State University (1971). He was an NIH Postdoctoral Scholar in the Department of Physiology, Yale University Medical School from 1971 to 1974. His first academic appointment was at the University of Wyoming in 1974 where he was promoted to full professor in 1983. In 1985 he was hired by the University of Kentucky Markey Cancer Center with academic appointments as professor in the College of Pharmacy in the Division of Medicinal Chemistry and in the Department of Biochemistry. He was appointed to be Chair and Professor of Chemistry/Biochemistry in the Department of Chemistry from 1996 to 2005. Dr. Haley had funding from NIH from 1974 through 2007 to develop numerous compounds useful for diagnostics involving photoaffinity labeling. He retired from the University of Kentucky in July 2008. He has lectured throughout the world and testified before Congressional committees and the Institute of Medicine regarding various aspects of mercury toxicity and neurological diseases.

Recently, Dr. Haley has addressed the fact that oxidative stress is a common occurrence in many diseases and has addressed the associated, low glutathione levels in people with oxidative stress as a major risk factor for many viral infections including influenza, HIV and COVID19 infections. To medically address the issue of oxidative stress Dr. Haley formed EmeraMed a small drug development company dedicated to developing a hydrophobic, non-toxic drug, emeramide, which has both exceptionally tight toxic metal chelation properties and hydroxyl free radical elimination properties. These properties make emeramide a very good treatment for several illnesses that have oxidative stress as a symptom. The chemical properties of emeramide make it capable of crossing all biomembranes allowing it to enter the cytoplasm of all cells of all tissues and allows it to cross the blood brain barrier to chelate toxic metals in central nervous system tissues. EmeraMed has filed the drug emeramide with the USA FDA an IND (investigational new drug) application and is now finishing the final FDA recommended and required studies to be able to submit a NDA (new drug application) in 2020 for its orphan drug designation for mercury toxicity.

CURRICULUM VITAE

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

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Nicholasville, KY 40356
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cell: 859-509-2246

EDUCATION:

<u>Institution</u>	<u>Year</u>	<u>Degree/Area</u>
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, WY
1979-1981	Associate Professor, Department of Biochemistry, University of Wyoming, Laramie, WY
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
1994-present	Scientific Advisor and Founder of Affinity Labeling Technologies in ASTeCC
1997-2005	Chairman & Professor, Department of Chemistry
2005-2007	Professor, Department of Chemistry
2007-present	Professor Emeritus
2006-present	Scientific Advisor for ALT Bioscience (reformed from Affinity Labeling Technologies)
2006-present	President and Founder of CTI Sciences in 2007 now called EmeraMed and located in Ireland.

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
1998	Elected Fellow in International Academy of Oral and Medical Toxicology (IAOMT)
1996-2005	Board of Trustees, Franklin College
2005	Awarded the Humanitarian Award by the International Academy of Oral and Medical Toxicology (IAOMT)
2006	Awarded the level of Master of IAOMT
2013	Awarded the Distinguished Alumni Award from Franklin College

GRANT SUPPORT

1975 - 1978	National Institutes of Health, "Application of Photoaffinity Nucleotide Analogs", \$82,000, Principal Investigator
1975	Research Coordination Committee, University of Wyoming \$1,800
1978 - 1981	National Institutes of Health, "Application of Photoaffinity Nucleotide Analogs", \$183,696, Principal 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, Principal 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-Principal Investigator
1990 - 1996	Lexington Clinic Foundation For Medical Education and Research, "Inhibition of Neoplastic Cell 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	Isosent, Inc. "Photoattachment of ³² P to angioplastic ballon catheters" \$52,000.
1998-2000	Wallace Research Foundation "Studies on the Neurotoxicity of Mercury" \$150,000
2000-2001	Wallace Resarch Foundation "Studies on Mercury Neurotoxic Effects at the CellularLevel" \$116,520.
2001-2002	Wallace Research Foundation "Vaccine and Thimerosal Toxicity Studies" \$112,720.
2002-2003	Wallace Research Foundation "Synergistic Neurotoxicity of Thimerosal & other compounds. \$78,720.
2003	Autism Research Institute "Neurotoxicity of Thimerosal" \$30,000.
2003-2004	Wallace Research Foundation "Thimerosal exposure and its biochemical relationship to autism. \$75,704.
2004-2005	Wallace Research Foundation "Synthesis of Biologically Based Mercury Chelators which Cross Cell Membranes and the Blood Brain Barrier" \$109,558.
2005	Gift for Mercury Research undefined from the HB Wyatt estate. \$482,000

TEACHING EXPERIENCE (Courses taught)

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, Biological Chemistry
 Mercury, Science and Politics
 Chemistry for Citizens
 Chemistry 108 organic and biochemistry for non-majors

INVITED LECTURES:

1975 - Sloan Kettering Memorial Cancer Institute, New York
 thru Colorado State University (3)
 1979 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 Illinois 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.
 1997 through 2002: I have given invited symposium talks on mercury toxicity at the rate of about 6-8 per year. These talks are throughout the USA with several being given in foreign countries including England, Canada, France, Germany, New Zealand, Belgium and Australia.
 2001 Invited speaker, Institute of Medicine on thimerosal and autism.
 2002 House Government Reform Committee, November 14,
<http://www.house.gov/reform/haley.02.11.14.htm>

26 Talks given in 2003.

Wayne State University, Dept. of Chemistry Jan 17th
 Dept. Pediatrics, University of Kentucky, Grand Rounds Speaker Jan 23rd.
 Autism Society of Central Kentucky, Century Methodist Church Jan. 27
 Arizona State University, Department of Bioengineering Feb 23-25
 Mealy Vaccine Conference, Boston MA, March 6-7
 Autism One Political Rally with Congressman Dan Burton, Washington, DC March 19.
 International Academy of Oral & Medical Toxicology, Las Vegas, NV March 28th.
 Autism Society of America/OCC, Pontiac, MI March 29th.
 Zeins's Dental Conference, Newark, NJ. April 11th.
 Greater Louisville Dental Study Group, Louisville, KY April 16th
 Speaker, UK Chemistry Dept. Awards Ceremony, April 25th.
 Autism One Conference, University of Loyala, Chicago, IL May 3-4
 Expert Witness, Congressional Committee on Government Reform, Dan Burton, Washington, DC May 7-8th
 Speaker, UK Superfund Environmental Project, Paducah, KY (by Sandra Bastin) May 13
 Defeat Autism Now (DAN) Conference, Philadelphia, PE 15-18th May
 Wallace Research Foundation, Phoeniz, AZ May 19-21st
 Wright State University, graduate recruitment seminar, May 23rd
 Swedish Heavy Metals Biology Research Group, June 11-15. I am a board member. Uppsalla, Sweden
 Heavy Metals Institute Task Force, Washington, DC., 19-22 June

Missouri University Research Reactor, Columbia, MO, 1-3 July
 Doctors for Disaster Preparedness Conference, Phoenix, AZ, July 12-13
 Autism One Congressional Press Conference, Washington, DC July 23
 Mercury Medical/Neurotoxicology Conference, NY, NY Sept. 10
 American Board of Clinical Medical Toxicology (ABCMT) St. Louis, MO, Sept. 11
 Italian Congress on Metal Toxicity, Teatro congressi P. d'Abano, Largo Marconi n.1-35031 Abano Terme, Italy. November 7-12. I am also chairman of one of the sessions.

25 Invited Symposium Talks, University Invitations and other presentations given in 2004.

Attorney General's Office, State of New York 5 January
 TV Interview WBNS-TV Columbus, OH 16 January
 Student ACS section, Lexington, KY 28 January
 NSF Program Evaluator, Washington, DC 4 February
 NAS Institute of Medicine, 9-10 February
 Dr. Ruth Koslack Talk Show, 11 February
 Congress International Toxicite of the Heavy Metaux, Geneva, Switzerland 27 February
 Dipartimento Di Scienze Biomolecolari Biotecnologie, University of Milan, Milan, Italy 28 February
 International Academy of Oral Medicine and Toxicology, Arlington, VA, 25-27 March
 Owensburo Country Club, A&S Fund Raiser, Owensburo, KY 15 April
 American Academy of Environmental Medicine, St louis, Missouri, 19 April
 Autism One Conference, Chicago, IL 27-30 April
 Shankland Dental Conference, Columbus, OH, 24 March
 American College for the Advancement of Medicine, Orlando, FL 18-20 May
 TV Interview with CBS News in Washington, DC, 26 May
 Autism One, Chicago Illinois, May 28-30
 Congressional/IOM News Conference, Washington, DC 2 June
 Tennessee Autism Association, Chattanooga, TN 4-5 June
 Presentation to Congressman Patrick Kennedy and other US Congressmen, 16 June
 Presentation to California Legislature on Autism 22 June
 Doctors for Disaster Preparedness Conference 26-28 June
 Attorney General's Office, State of California, 9-10 August
 University of Louisville, Department of Chemistry, 10 September
 State of California, expert witness, Sacramento, CA 14-16 September
 Tulane University Conference on Mercury Toxicity, New Orleans, LA 24 September
 Washington State University, Department of Chemistry/Biochemistry 25 September
 Autism Research Institute Think Tank Presenter, San Diego, CA 29 September
 Defeat Autism Now Conference, San Diego, CA 30 September
 International Academy of Oral Medicine and Toxicology, Nashville, TN 7-9 October
 Presentation to Senator Grassley and other Congressional members on Autism, Washington, DC., 12 October
 Pikeville College of Osteopathic Medicine, Pikeville, KY 22 October
 TV Interview WLKY of Louisville, KY 27 October
 Auburn University, Defeat Autism Now Mini-Conference, Auburn, AL 5-6 November
 Geneva Center on Autism Conference, Toronto, Canada 11-12 November

Invited Talks in 2005

Autism Symposium by Autism Thoughtful House, Austin, TX 1-3 March
 Interviewed by Robert Kennedy on Ring of Fire talk show 5 March
 Autism Symposium by Deidre Imus Children's Center Newark, NJ 5-6 March

Radio Liberty talk show interview by Dr. Stanly Montcrief
Presentation to Dr. Bill Raub, NIEHS on mercury toxicity 16 May
Speaker at American College of Academic Medicine, Orlando, FL
Speaker at Autism One Conference, Chicago, IL May 27-29
Speaker at United Methodist Church Regional Conference, Hampton, VA June 15
Presentation to Congressman David Weldon and others Washington, DC June 8
Speaker at Autism Rally, Washington, DC July 20
Presentation to NIHES, Environmental Factors and Neurological Disorders, Bethesda, MD August 25th
Speaker at International Academy of Oral and Medical Toxicology, Las Vegas, NV September 9-11
Speaker at the Greater Colorado Autism Association, Boulder, CO September 30-October 2.
Presenter at the "Antecedent Biomarkers for Alzheimer's Disease Conference" at Washington University in
St. Louis, Missouri 7-8 October, 2005
Speaker at the Scottish Autism Conference in Edinburgh, Scotland on October 13 to 16, 2005.
Speaker at the Northern Kentucky Autism Conference at N. Kentucky University on October 22, 2005.
Speaker at the Defeat Autism Now Think Tank and Conference in Long Beach, CA on October 26-28th, 2005.
Invited Expert for testimony before the Tennessee Legislature on 1 November 2005.
Invited Speaker for the Kentucky Association of Naturopathic Physicians, Louisville, KY November 5, 2005.
Invited Speaker to the National Autism Association in Myrtle Beach, NC on November 11-12, 2005.
Invited Speaker at the Louisville Rotary Club on November 17, 2005.
Invited Speaker at the Swiss Autism Association, Zurich, Switzerland, December 1-6, 2005.

Invited Talks 2006

Invited presenter. Dikici, E., Bhattacharyya, A. and Haley, B. Rationale for the detection and quantification of glutamine synthetase in the serum and cerebrospinal fluid as a potential diagnostic test for Alzheimer's disease and amyotrophic lateral sclerosis. Presented at the "Antecedent Biomarkers for Alzheimer's Disease Conference" at Washington University in St. Louis, Missouri 7-8 October, 2006
Invited speaker, Kentucky Autism Commission, Louisville, KY January 21, 2006
Invited speaker, University of Louisville, Dept Chem. Engineering January 27, 2006
Invited speaker, Health Realities Symposium, Orlando, FL February 4-5, 2006
Expert Witness, State of Connecticut, New Britain, CN February 8, 2006
Invited speaker, Autism Society of Bluegrass, Lexington, Ky February 25, 2006
Invited speaker, Great Plains Autism conference, Orlando, FL, March 4-5
Presenter, press conference in Washington, DC on autism March 8, 2006
Invited speaker, International Academy Oral and Medical Toxicology, Arlington, VA March 9-11, 2006
Invited Speaker, International College of Integrative Medicine, Chicago, IL March 22, 2006
Expert Witness, State of Connecticut, New Britain, CN March 31, 2006
Invited speaker, Kentucky Autism Association, Owensboro, KY May 15, 2006
Invited Speaker, Dental Mercury Summit, Baltimore, MD June 9, 2006
Invited speaker, Moms Against Mercury, Atlanta, GA June 28, 2006
Invited Speaker, U.S. Autism and Aspergers Association, Salt Lake, UT, August 9-11, 2006
Invited expert testimony, FDA hearing on dental amalgam, Gaithersburg, MD, September 7, 2006
Invited speaker, International Academy of Oral and Medical Toxicology, W. Palm Beach, FL, Sept. 8-10, 2006
Invited speaker, American College of Academic Medicine, Palm Springs, CA November 1-3, 2006
Invited speaker, Eastern Kentucky University, December 2006

Invited Talks 2007

University of Calgary, Calgary, Alberta Canada 19 January 2007
Invited expert, State Legislative committees of Nebraska, Iowa and Missouri, January 22, 23, 24, 25th, 2007.

Invited speaker, Bournemouth, England. Autism is Treatable Conference 9-10 February, 2007.
 Invited speaker, Phoenix, AZ International Academy Biological Dentistry conference, 17 February 2007.
 Invited speaker, Tuscon, AZ International Academy of Oral and Medical Toxicology, 14-16 March 2007.
 Presentation to Congressmen Moran (Virginia) and Weldon (FL) in Washington, DC. 22 March 2007.
 Invited expert, Arkansas legislative committee, Little Rock, AK 25-26 March, 2007.
 Invited speaker, Scientific Advisory Board meeting of IAOMT, Atlanta, Georgia, 21 April 2007.
 Presenter to KEDFA, Frankfurt, KY April 26 2007.
 Invited speaker American College of Academic Medicine, Chicago, IL 10 May 2007.
 Invited speaker Michigan Autism conference. Iron Mountain, MI 19 May 2007.
 Invited speaker Autism One conference, Chicago, IL 25 May 2007.
 Invited speaker Moms Against Mercury, Atlanta, GA 6-7 June 2007.
 Invited presenter Meeting with FDA commissioner of science, Washington, DC. 22 June 2007.
 Honored guest, Florida Autisms Association Fund Raiser. Ponte Verde Beach, FL 28 June 2007.
 Meeting with Dean Michael Kotlikoff, Cornell U. School Veterinary Medicine. 6-7 July 2007.
 Invited speaker Boulderfest Autism conference, Boulder, CO 12 July 2007.
 Invited speaker United States Autism and Asperger's Association, Denver, CO. 7-9 August 2007.
 Invited speaker West Virginia Medical Group, Dr. John MacCallum, Charlottesville, WV. 17 August, 2007.
 Expert witness Yost Law firm. Autism parents vs pharmaceutical firms. 20-21 August 2007.
 Invited speaker Stelior Autism conference Tartar, Estonia 29-31 August, 2007
 Invited speaker International Academy of Oral and Medical Toxicology. Las Vegas, NV 7-8 September 2007.
 Invited speaker Northern Kentucky University, Dept. Chemistry, Ft. Morgan, KY 19 September 2007.
 Invited speaker Great Plains Autism conference, Kitchener, Ontario Canada 28-29 September.

Stopped listing invited talks in 2008 even though they continued through 2013. I have given 10 talks already in 2013 including 7 invited talks in France and the EU (Marseille, Lyon, Nice, Bayonne, La Rochelle, Luxembourg, Milan and Geneva)

INVITED TALKS STOPPED BEING RECORDED IN 2008

SERVICE TO UNIVERSITY OF KENTUCKY 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

PROGRESS IN THE DEVELOPMENT OF A DRUG TO TREAT MERCURY TOXICITY THROUGH CTI SCIENCES.

- 2010-12 A specific compound called NBMI was studied for safety and effectiveness in treating Mercury toxicity in test animals, rats and dogs. Based on this data dossiers for obtaining Orphan drug designation was submitted to the European Medicines Agency (EMA) orphan drug evaluation committee. Orphan drug designation was awarded by the EMA.
- 2013 Orphan drug designation applied for and awarded by the FDA.
- 2014 The EMA, through the Swedish Medical Authority, granted CTI Science the right to Proceed with a Phase I study of NBMI which starts in April 2014.

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 of 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 Occurrence 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 Human Erythrocyte Membranes Using 8-Azido-adenosine-3'-5' Cyclic Monophosphate. J. Supra. Mole. Structure 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. Biophys. 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 ATP 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 [³²P]-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 α -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'-³²P]-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'-O-(2,4,6-trinitrocyclohexadienylidene) 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 \square -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 [$\square^{32}P$]-8N₃ 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□ With [□-³²P]8N₃-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 □ and □ Heavy Chains of the Outer Arm Dynein from Chlamydomonas Flagella. J. Biol. Chem. **264**, 10210-10218 (1989).
60. Khatoun, S., Campbell, S.R., Haley, B.E. and Slevin, J.T. Aberrant GTP □-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., Kolaczowska, 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)-□-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)- α -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 α -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 ³⁵S-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 with [³²P]8N₃GTP. Peptide Research 4, #2, 79-83 (1991).
82. Drake, R.R., Zimniak, P., Haley, B.E., Lester, R., Elbein, A.D. and Radomska, A. Synthesis and Characterization of 5-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 Radomska, A. Synthesis and Characterization of 5-Azido-UDP-Glucuronic Acid. J. Biol. Chem., 266, 23257-23260 (1991).
84. Hiestand, D., Haley, B., and Kindy, M. Role of Calcium in Inactivation 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 characterization 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-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 Activity Intrinsic 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. Gunnarsen, 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 [32 P]-2N₃NAD⁺: 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 α -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 5 α -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 α -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 5 α -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. Haley, B. Kasarskis, EJ, *et al.*, *GTP-binding proteins in amyotrophic lateral sclerosis cerebrospinal fluid.* Ann Neurol (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- α 2. 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 **54**, 276, 1998
122. Holmes, A.S., Blaxill, M.F. and Haley, B. Reduced Levels of Mercury in First Baby Haircuts of Autistic Children. International J. of Toxicology, **22**:1-9, 2003

123. Haley, B. The Relationship of the Toxic Effects of Mercury to Exacerbation of the Medical Condition Classified as Alzheimer's Disease. *Nordic J. of Biological Medicine*, June-July 2003
124. Haley, B. Mercury Toxicity: Genetic Susceptibility and Synergistic Effects. *Medical Veritas* 2 (2005) 1-8.
125. J. Mutter, J. Naumann, R. Schneider, H. Walach and B. Haley Mercury and Autism: Accelerating Evidence? *Neuroendocrinology Letters* Vol 26 No. 5, October 2005.
126. Wojcik, D.P., Godfrey, M.E. Christie, D. and Haley, B.E. Mercury Toxicity Presenting as Chronic Fatigue, Memory Impairment and Depression: Diagnosis, Treatment, Susceptibility and Outcomes in a New Zealand General Practice Setting (1994-2006) *Neuro. Endocrinol. Letters* Aug5:27(4) 2006 416-423.
127. Haley, B. A look at the 2006 FDA hearing on the safety of dental amalgams and possible toxicological concerns *Medical Veritas* (2006) October 1-5.
128. Haley, B. The relationship of the toxic effects of mercury to exacerbation of the medical condition classified as Alzheimer's disease. *Medical Veritas* 4 (2007) 1510-1524.
129. Clarke, D., Buchanan, R., Gupta, N. and Haley, B. Amelioration of Acute Mercury Toxicity by a Novel, Non-Toxic Lipid Soluble Chelator: Effect on Animal Health, Mercury Excretion and Organ Accumulation in Adult Rats. *Toxicological and Environmental Chemistry* 2012 V94 #3 616-640.
130. Jordan D. Secor, Sainath R. Kotha1, Travis O. Gurney1, Rishi B. Patel1, Nicholas R. Kefauver1, Niladri Gupta, Andrew J. Morris, Boyd E. Haley, Narasimham L. Parinandi . Novel lipid-soluble thiol-redox antioxidant and heavy metal chelator, N,N-bis-(2-mercaptoethyl)isophthalamide (NBMI) and phospholipase D-specific inhibitor, 5-fluoro-2-indolyl des-chlorohalopemide (FIPI) attenuate mercury-induced lipid signaling leading to protection against cytotoxicity in aortic endothelial cells. *International Journal of Toxicology* December 2011 vol. 30 no. 6 619-638
131. Patel RB, Kotha SR, Sauers LA, Malireddy S, Gurney TO, Gupta NN, Elton TS, Magalang UJ, Marsh CB, Haley BE, Parinandi NL. Thiol-redox antioxidants protect against lung vascular endothelial cytoskeletal alterations caused by pulmonary fibrosis inducer, bleomycin: Comparison between classical thiol protectant, N-acetyl-L-cysteine (NAC) and novel thiol antioxidant, N,N'-bis-2-mercaptoethyl isophthalamide (NBMI). *Toxicol Mech Methods*. 2012 Mar 13. [Epub ahead of print] and on PubMed
132. Thimerosal Exposure and Susceptibility; the Role of Sulfation Chemistry and Thiol Availability in Autism
Authors: Janet Kern *, Boyd Haley, David Geier, Lisa Sykes, Paul King, Mark Geier
Int. J. Environ. Res. Public Health **2013**, *10*, 3771-3800.
133. "Thimerosal as Discrimination: Vaccine Disparity in the UN Minamata Convention on Mercury" to the *Indian Journal of Medical Ethics*. Lisa K. Sykes, David A. Geier, Paul G. King, Janet K. Kern, Boyd E. Haley, Carmen G. Chaigneau, Mary N. Megson, James Love, Robert E. Reeves, and Mark R. Geier,
134. New science challenges old notion that mercury dental amalgam is safe. Kristin G. Homme, Janet K. Kern, David A. Geier, Boyd E. Haley, Paul G. King, Lisa K. Sykes and Mark R. Geier. *Toxicological & Environmental Chemistry*, 2013, Vol. 0, No. 0, 1-8.

135. Brian Hooker, et al. Boyd Haley, "Methodological Issues and Evidence of Malfeasance in Research Purporting to Show Thimerosal in Vaccines Is Safe," *BioMed Research International*, vol. 2014, Article ID 247218, 8 pages, 2014. doi:10.1155/2014/247218.
136. Heme Iron-Induced Cytotoxicity to Pulmonary Vascular Endothelial Cells through Oxidative Stress and Bioactive Lipid Signaling is Protected by Novel Thiol Chelator and Antioxidant Drug, NBMI: Implications in Sickle Cell Disease Iron Chelation Therapy. S. Kotha, Y. Wu, T. Gurney, H. Rao, N. Reddy, P. Desai, Boyd Haley, E. Kraut, N. Parinandi. Abstracts of Sickle Cell in Focus 2014

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. Khatoun, 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. Photolabile Multisubstrate Analogues as Photoaffinity Probes for Adenylate Kinase: Synthesis and Kinetic Studies. FASEB Meeting, New Orleans, Louisiana (1982).
30. Haley, B. 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 Epididymal 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'-³²P] 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 *Staphylococcal* 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. Stoichiometric Autophosphorylation 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 α -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 α -Tubulin Using $8N_3$ GTP. ASBC Meetings, Philadelphia, Pennsylvania (1987).
50. Khatoon, S., Slevin, J.T. and Haley, B.E. GTP Binding to the α -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 Biphosphate Carboxylase with 8-Azido-ATP. Plant Physiology (1988).
58. Droms, K.A., Smith, G.J., Malkinson, A.M. and Haley, B.E. G_s 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 $[^{32}P]$ 5N₃UDP-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)- α -Glucan Synthase of Higher Plants by Photoaffinity Labeling with 5-Azido-UDPG. Fifth Cell Wall Meeting, Edinburgh (1989).
68. Gunnarsen, D.J., Slevin, J.T. and Haley, B.E. Novel Proteins in Alzheimer's Diseased Brain May be Due to Pathological Modification of α -Tubulin. ASBMB Meeting, New Orleans, Louisiana (1990).
69. Drake, R., Hiestand, D., Sharp, J. and Haley, B. Nucleotide Binding and Autophosphorylation Properties of IL-1 α . 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 $_3$ GTP 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 [α - 32 P]8N $_3$ GTP. ASBMB Meeting, New Orleans, Louisiana (1990).
76. Droms, K.A., Haley, B.E. and Malkinson, A.M. Mechanism of Decreased α -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 Stimulating Factor (GM-CSF) Eliminates Its Biological Activity. FASEB Meeting, 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]2N $_3$ 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. Gunnarsen, 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. Characterization 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., Chavan, A. and Haley, B. Identification of a Nucleotide Binding Domain on Recombinant Human IL-1 α . 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 Al³⁺ 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 -³²P]ATP or [β -³²P]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 Trinitrophenyl 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, Louisiana (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 HgCl₂ 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 α -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 2N₃ATP 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 [³²P]8N₃GTP. 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 [³²P]8N₃GTP. 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).
121. Dikici, E., Bhattacharyya, A. and Haley, B. Presented at the "Antecedent Biomarkers for Alzheimer's Disease Conference" at Washington University in St. Louis, Missouri 7-8 October, 2005
- 122.

I stopped listing abstracts in my CV in 1997.

Boyd Haley

CURRICULUM VITAE

The basic research interest of my laboratory initially centered on the biochemical and biomedical problems involving nucleotide 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. My approach to the study of this general phenomenon was to synthesize novel nucleotide analogs that are photoactive or fluorescent, or both, commonly known as "photoaffinity probes". The analogs are then used to study various aspects of protein-nucleotide interactions which regulate enzyme activity. Analogs I initiated the initial synthesis and development of were 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-P¹, P⁴-tetraphosphate.

These nucleotide photoaffinity analogs were used by myself and others 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 I investigated and published on. I was also interested in the several low molecular weight nucleotide binding proteins that were detected in human cerebrospinal fluid that seemed to vary in presence and concentration with various disease states.

At the end of my academic career I was involved in studies that implicate low levels of Hg as being capable of being involved in certain neurological diseases. This is based on our observation that Hg²⁺ chelated with EDTA is a more potent inhibitor of tubulin polymerization than is free Hg²⁺. Addition of Hg-EDTA complex to non-demented human brain homogenates renders the photolabeling profile to be identical to that of Alzheimer's diseased (AD) 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. We also reported that Creatine Kinase, an enzyme well known to be mercury sensitive, was over 98% inhibited 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. It is my hypothesis that many neurological diseases are exacerbated or even caused by exposure to low level heavy metal toxicants that are synergistic in their actions and affect humans differently dependent on the polymorphisms in certain critical enzymes or proteins, APO-E being a good example where there is major differences in Hg²⁺ binding capacity of the different forms that increase the risk of early AD.

I have dedicated the last years of my research to developing compounds, mostly chelators, that can cross the lipid bilayers of cell membranes and the blood brain barrier and be useful in treating the toxicity caused by heavy metals and the underlying oxidative stress induced by the metal catalyzed production of hydroxyl free radicals. I have a drug, N,N-bis(2-mercaptoethyl)isophthalamide (NBMI) that is now a designated orphan drug by the European Medicines Agency and the U.S. Food and Drug Administration for the treatment of mercury toxicity. This drug has progressed to the point where an Introductory Medical Product Dossier is being prepared for application to warrant a Phase I study.

PATENTS:

No. 5,800,991 Nucleotide or Nucleoside Photoaffinity Compound Modified Antibodies. Methods for their Manufacture and use thereof as diagnostics and therapeutics. Issued September 1, 1998

No. 7,723,118 B2 Compositions and Methods for the Simultaneous Detection of Volatile Sulfur Compounds and Polyamines. Issued May 2010

No US2009 047393 WO2009152513 Device for the Rapid Determination of Disease Associated Thiol Compounds. Issued December 2009

No. US 8,426,368 Method of Ameliorating Oxidative Stress and Supplementing the Diet. Issued April 2013

No. US 8,575,218 Thiol Containing Compounds for the removal of elements from tissues and formulations therefor. Issued November 2013