VITA

D. ALLAN BUTTERFIELD

Current Position: The UK Alumni Association Professor of Biological Chemistry; Associate Vice President for Research; Faculty of the Sanders-Brown Center on Aging; Interim Executive Director of the Tracy Farmer Institute for Sustainability and the Environment; and Director, Redox Metabolism Shared Resource Facility, NCI-designated Markey Comprehensive Cancer Center

Business: Department of Chemistry
University of Kentucky
Lexington, KY 40506-0055
Ph: (859) 257-3184
FAX: (859) 323-9985
E-MAIL: dabcns@uky.edu

Home: 3368 Sutherland Drive
Lexington, KY 40517

Redox Metabolism
Shared Resource
334 Combs Building
Markey Cancer Center
University of Kentucky
Lexington, KY 40536
(859) 323-1106

Personal

Born, January 14, 1946, Milo, Maine
Wife, Marcia; Daughter, Nyasha
Hobbies: Weightlifting; Swimming

Education

B.A. (with Highest Distinction in Chemistry), University of Maine, 1968
Ph.D., Physical Chemistry, Duke University, 1974
Thesis: Spin Label Investigations of Model and Biological Membranes:
I. Radical Decay Kinetics in an Electron Transport Enzyme System
II. Studies on Erythrocytes From Patients With Myotonic Muscular Dystrophy (D. B. Chesnut)

Professional Experience

- High School Chemistry/Mathematics Teacher Mrewa, Rhodesia (Zimbabwe), 1968-71
- Graduate Teaching or Research Assistant, Department of Chemistry, Duke University, 1971-74
- Instructor, NSF Short Course on Magnetic Resonance, Duke University, 1973
- NIH Postdoctoral Fellow, Department of Chemistry and Division of Neurosciences, Duke University College of Medicine, 1974-75

- Assistant Professor of Chemistry, University of Kentucky, 1975-78
- Associate Professor of Chemistry, University of Kentucky, 1978-83
- Research Professorship, University of Kentucky, 1980-81
- Professor of Chemistry, University of Kentucky, 1983-present
- Director of General Chemistry, 1983-85
- Director of Graduate Studies in Chemistry, 1985-87
- Director, University of Kentucky Center of Membrane Sciences, 1986-2014
- Faculty, Sanders-Brown Center on Aging, 1987-present
- Alumni Professor of Chemistry, University of Kentucky, 2002-present
- Faculty Associate, Spinal Cord and Brain Injury Research Center, 2002-present
- Special Assistant to the Vice President for Research, University of Kentucky, 2014-2015
- Associate Vice President for Research, 2015-present
- Interim Executive Director, Tracy Farmer Institute for Sustainability and the Environment, 2021-present.

Current Research Interests

- Physical, Analytical, and Biochemical Studies in Neurological Diseases
- Amyloid β-Peptide Associated Oxidative Stress in Alzheimer's Disease
- Redox Proteomics Identification of Brain Proteins in Neurodegenerative Disorders
- Roles of ApoE Allele 4 in Neurodegeneration in Alzheimer disease
- Redox Mechanisms for and Therapy in Chemotherapy Induced Cognitive Impairment

Professional Activities

- American Chemical Society
- The Society of Sigma Xi
- Phi Lambda Upsilon Chemistry Honorary Society
- The Biophysical Society
- American Society for Biochemistry and Molecular Biology
- International Society of Electron Paramagnetic Resonance
- Society for Neuroscience
- International Society for Neurochemistry
- Neurotoxicity Society
- Society for Free Radical Biology of Medicine
- Senior Associate Editor, *Journal of Alzheimer's Disease*
- Editorial Board Member, *Aging Research Reviews*
- Editorial Board Member, *Neurotoxicity Research*
- International Editorial Board Member, *Biomolecular Frontiers*
- Editorial Board Member, *IN VIVO*
- Editorial Board Member, *Current Pharmaceutical Design*
- Editorial Board Member, *Journal of Neuroprotection and Neuroregeneration*
- Editorial Board Member, *Neurobiology of Disease*
- Editorial Board Member, *Biochimica et Biophysica Acta-Molecular Basis of Disease*
- Editorial Board Member, *European Journal of Neurodegenerative Diseases*
- Editorial Board Member, *Neuroproteomics*

- Editorial Board Member, *Pharmacological Research*
- Editorial Board Member, *Frontiers in Pharmacology*
- Editorial Board Member (Elected), *Free Radical Biology and Medicine*
- Editorial Board Member, *Gerotarget (Aging and Age-related Diseases)*
- Consulting Editor, *International Journal of Biomedical Nanoscience and Nanotechnology*
- Editorial Board Member, *Antioxidants*
- Permanent Member, Neural Oxidative and Metabolic Death Study Section for NIH, 2008-2012, Chair 2012
- Member, Scientific Advisory Group, Ontario Genomics Institute, Canada
- Member, International Advisory Panel for the Centre for Neurobiology, National University of Singapore, 2005-present
- Phi Beta Kappa Honorary Society, 1968
- Phi Kappa Phi Honorary Society, 1967
- NIH Biomedical Science Research Award, 1972
- Graduate School Research Award (Duke University), 1972
- NIH Postdoctoral Fellowship, 1974
- University of Kentucky Research Foundation Faculty Research Award, 1979
- Awarded University of Kentucky Research Professorship, 1980-81
- Appointed to Biophysics and Biophysical Chemistry Study Section A of the National Institutes of Health (NIGMS), Spring 1980 Meeting
- Appointed to National Institute of Health Site Visit Study Section, Summer 1980
- Invited Speaker, Gordon Research Conference on Magnetic Resonance in Biology and Medicine, 1980
- Consultant, National Institute on Aging, NIH Site Visit, "Alzheimer's Disease Center," May, 1987
- Consultant, National Heart, Lung and Blood Institute, NIH Site Visit, "Comprehensive Sickle Cell Disease Center," May, 1987
- Special Faculty Grant, 1988-1990
- Editorial Board Member, *Journal of Membrane Science*, 1989-2006
- Finalist, College of Arts and Sciences Distinguished Professorship, 1990, 1991
- Dow Chemical Distinguished Lectureship, University of Detroit, 1995
- The Honorable Order of Kentucky Colonels, 1995
- Consultant, National Institute on Aging, Program Project, 1996
- Recipient, Distinguished University Scientist Award From the Kentucky Academy of Science, 1996
- Recipient, William B. Sturgill Award for Graduate Education, 1997
- Recipient, Southern Chemist Award From the American Chemical Society, 1997
- Recipient, Presidential Award for Excellence in Science, Mathematics and Engineering Mentoring, Presented by President Clinton in the White House, 1998
- Appointed as Senior Associate Editor, *Journal of Alzheimer's Disease*
- Member, National Institute on Aging, NIH Site Visit on "Alzheimer's Disease PPG," 1998
- Member, National Institute on Aging, NIH Site Visit on "Alzheimer's Disease PPG," 1999
- Member, National Institute on Aging, NIH Site Visit on "Alzheimer's Disease PPG," 2000
- Member, National Institute on Aging, NIH Site Visit on "Prion Disorders," 2002
- Member, National Institute on Aging, NIH Site Visit on "Alzheimer's Disease," 2002
- Member, National Institute on Aging, NIH Site Visit on "Alzheimer's Disease," 2003

- Member, National Institute on Aging, NIH Site Visit on "Alzheimer's Disease," 2004
- Member, National Institute on Aging, NIH Site Visit on "Alzheimer's Disease," 2005
- Member, National Institute on Aging, NIH Site Visit on "Alzheimer's Disease," 2007
- Recipient, Honorary Doctor of Science Degree, University of Maine, Commencement, 2002
- Alumni Association Professor of Biological Chemistry, University of Kentucky, 2002-Present
- Ad-hoc Member, Study Section on Conflict of Interest, NIGMS, NIH
- Ad-hoc Member, Study Section on Synapses, NINDS, NIH
- Recipient, Award for Most Outstanding PhD Committee Member for Prince of Songkla University, Thailand, 2007
- International Member, Scientific Review Panel, Ministry of Education, for the Government of Singapore, 2006-present
- Invited Speaker, Gordon Research Conference on Oxygen Radicals, 2010
- Recipient, Albert D. and Elizabeth H. Kirwan Memorial Prize for Excellence in Research, 2010
- Selected as a Fellow of the Society for Redox Biology and Medicine, 2012 (one of only 28 Fellows in the world at the time of my selection).
- Recipient, 2013 Discovery Award from the Society for Redox Biology and Medicine
- 2014: Recipient, Alkmeon International Prize for Progress in Science, presented at the University of Rome, Tor Vergata in Rome, Italy
- 2014: Recipient, Society for Free Radical Biology and Medicine Mentoring Excellence Award
- 2015: Selected to serve on NIH Study Section, “Enabling Bioanalytical and Imaging Technologies.”
- 2015: Selected to serve on NIH/NCI Study Section, “Provocative Questions.”
- 2017: Presented “A Teacher Who Makes a Difference Award,” University of Kentucky.
- 2018: Named Honorary Advisor to the journal, *Current Pharmaceutical Design*, joining Nobel laureates and other distinguished scientists with this title.
- 2021: Named the College of Arts and Sciences Outstanding Graduate Student Mentoring Awardee, CAREER AWARD.
- 2022: Named Chairperson of the National Institute of Aging Special Emphasis Panel of U01 Proposals on mTOR Inhibitors
- 2023: Selected as the 2023 Alumni Career Awardee by the University of Maine Alumni Association Board. This award, given to one UMaine graduate each year, is the most prestigious award presented by the UMaine Alumni Association Board in recognition of a UMaine graduate whose life’s work is marked by outstanding achievements in professional, business, civic, and/or other public service areas.
- 2024-present: Advisory Committee of the Biochemistry PhD Program of Sapienza University of Roma.
- 2024: Chaired NIA Special Emphasis Panel for the National Institute on Aging.

Other Honors

- Top-20 most downloaded paper in *Free Radical Biology & Medicine* for the period 2005-2006

- My paper that first described the free radical associated with Alzheimer's amyloid beta-peptide, Hensely et al. *Proceedings of the National Academy of Sciences USA* **91**, 3270-3274 (1994), is the most cited paper (more than 900 citations) of any paper From faculty in the Department of Chemistry at the University of Kentucky.

- Top-4 most downloaded paper in the journal, *Biochimica et Biophysica Acta—Proteins and Proteomics*. Our paper showed the importance of the single methionine residue of Abeta(1-42) in the peptide's oxidative stress and neurotoxic properties. The citation of the paper is: *Biochimica et Biophysica Acta* **1703**, 261-266 (2005).

- Two papers in *Neurobiology of Aging* [# 402 and #368 below] are the number 2 and number 18 most downloaded papers for this journal in 2006-2007.

- My 1997 paper in *Chemical Research in Toxicology* [# 159] is among the top one percent of cited papers published by the American Chemical Society for the 10-year period 1997-2007 according to the American Chemical Society.

- My paper in *The Journal of Alzheimer's Disease* [#210 below] is the 4th most cited paper of this journal since inception of JAD in 1999.

- My paper in *Neurobiology of Disease* [#475 below] is the most downloaded research (data) paper in this journal in 2010.

- My paper in *Neurobiology of Disease* [#345 below] is the most cited paper in this journal in the period 2006-2010.

- My paper in *Neurobiology of Disease* [#347 below] is the second most cited paper in this journal in the period 2006-2010.

- My paper in *The Journal of Neurochemistry* [#590 below] is the 2nd most cited paper in this journal in the period 2015-2017.

- Listed as in the Top-40 of most-productive and most-cited investigators in the field of Alzheimer's disease research *in the entire world* as indicated in *the Journal of Alzheimer's Disease* **16**: 451-465 (2009).

- In 2020, named as in the top 0.007% of more than 144,000 scholars worldwide in the field of Alzheimer disease research. Number 10 worldwide and number 6 in the USA. **Source**: ExpertScape, Inc.

- Tanea Reed, who received the Ph.D. under my aegis, won the 2010 Hermann Esterbauer International HNE Award for junior faculty members for her research performed in my laboratory on proteomics identification of HNE-bound brain proteins in AD and MCI.

- Of top-20 most productive researchers in the field of oxidative stress in neurodegenerative papers worldwide, I am ranked number 1. Moreover, this has contributed to the University of Kentucky being tied with the University of Texas system as the institution with 5th highest number of papers in this field. **Source**: Yeung et al. (2021) Reactive Oxygen Species and Their Impact in Neurodegenerative Diseases: Literature Landscape Analysis, *Antioxidant Redox Signal.* **34**, 402-420.

- Listed as among the top-five researchers worldwide in papers and citations of studies of mechanisms of brain metabolism in Alzheimer disease over the 20-year period of 2000-2020. **Source:** Du, Y-H et al. (2021) Bibliometric Analysis Study on the Mechanisms of Brain Energy Metabolism Disorders in Alzheimer's Disease from 2000-2020. *Frontiers in Neurology* **12**: 670220.

- Listed as among the top 0.3% of the 67,000 biologists and biochemists from all countries examined based on a number of factors including the D-index [Discipline-specific H-index (my D-index = 135)]. **Source:** Research.com index from December 2022.

RESEARCH PUBLICATIONS…….H-Index = 128 (Scopus); H-Index = 139 (Research Gate); D-index (discipline-specific H-index) = 135; >60,000 Citations (ResearchGate; Research.com)

1. **D.A. Butterfield**, D.B. Chesnut, A.D. Roses, and S.H. Appel, "Electron Spin Resonance Studies on Erythrocytes from Patients with Myotonic Muscular Dystrophy," *Proceedings of the National Academy of Sciences, USA* **71**, 909-913 (1974).

2. **D.A. Butterfield**, A.D. Roses, M.L. Cooper, S.H. Appel, and D.B. Chesnut, "A Comparative Electron Spin Resonance Study of the Erythrocyte Membrane in Myotonic Muscular Dystrophy," *Biochemistry* **13**, 5078-5082 (1974).

3. **D.A. Butterfield**, A.L. Crumbliss, and D.B. Chesnut, "Radical Decay Kinetics in Ferrocytochrome c. Model Membranes: A Spin Label Study," *J. Amer. Chem. Soc.* **97**, 1388-1393 (1975).

4. A.D. Roses, **D.A. Butterfield** S.H. Appel, and D.B. Chesnut, "Phenytoin and Membrane Fluidity in Myotonic Dystrophy," *Arch. Neurol.* **32**, 535-538 (1975).

5. A.D. Roses, S.H. Appel, **D.A. Butterfield**, S.E. Miller, and D.B. Chesnut, "Specificity of Biochemical and Biophysical Tests in Duchenne and Myotonic Muscular Dystrophy, Carrier States, and Congenital Myotonia," *Trans. Amer. Neurol. Assoc.* **100**, 17-20 (1975).

6. A.D. Roses, S.H. Appel, **D.A. Butterfield**, and D.B. Chesnut, "Membrane Alterations in Myotonic Muscular Dystrophy," in *Recent Advances in Myology*, ed. by J. N. Walton, American Elseiver, Amsterdam 1975, pp. 422-428.

7. S.H. Appel, A.D. Roses, R.R. Almon, C.G. Andrew, P.G. Smith, J.O. McNamara, and **D.A. Butterfield**, "Biochemical Approaches to Altered Muscle Membrane Structure and Function," in *The Nervous System Vol. I.* ed. by R. O. Brady, Raven Press, New York, 1975, pp. 443-454.

8. **D.A. Butterfield**, C.C. Whisnant, and D.B. Chesnut, "On the Use of Spin Labeling Technique in the Study of Erythrocyte Membranes," *Biochim. Biophys. Acta*, **426**, 697-702 (1976).

9. **D.A. Butterfield**, A.D. Roses, S.H. Appel, and D.B. Chesnut, "Electron Spin Resonance Studies of Membrane Proteins in Erythrocytes in Myotonic Muscular Dystrophy," *Arch. Biochem. Biophys.* **177**, 226-234 (1976).

10. **D.A. Butterfield**, D.B. Chesnut, A.D. Roses, and S.H. Appel, "Spin Label Study of Erythrocyte Membrane Fluidity in Myotonic and Duchenne Muscular Dystrophy and Congenital Myotonia," *Nature* **263**, 159-161 (1976).

11. **D.A. Butterfield** and W.E. Watson, "Electron Spin Resonance Studies of an Animal Model of Human Congenital Myotonia: Increased Erythrocyte Membrane Fluidity in Rats With 20,25-Diazacholesterol Induced Myotonia," *J. Membr. Biol.* **32**, 165-176 (1977).

12. **D.A. Butterfield**, "Electron Spin Resonance Studies of Erythrocyte Membranes in Muscular Dystrophy," *Acc. Chem. Res.* **10**, 111-116 (1977).

13. **D.A. Butterfield**, J.Q. Oeswein, and W.R. Markesbery, "Electron Spin Resonance Study of Membrane Protein Alterations in Erythrocytes in Huntington's Disease," *Nature* **267**, 453-455 (1977).

14. **D.A. Butterfield**, "Electron Spin Resonance Investigations of Membrane Proteins in Erythrocytes in Muscle Diseases: Duchenne and Myotonic Muscular Dystrophy and Congenital Myotonia," *Biochim. Biophys. Acta* **470**, 1-7 (1977).

15. W.R. Markesbery and **D.A. Butterfield**, "Scanning Electron Microscopy Studies of Erythrocytes in Huntington's Disease," *Biochem. Biophys. Res. Commun.* **78**, 560-564 (1977).

16. **D.A. Butterfield**, J.Q. Oeswein, and W.R. Markesbery, "Biophysical Studies of Erythrocyte Membranes in Huntington's Disease," in *Biomolecular Structure and Function* (P. F. Agris, Ed.), (R. N. Loeppky and B.D. Sykes, Assoc. Eds.), Academic Press, 1978, pp. 101-107.

17. **D.A. Butterfield** and P. Leung, "Erythrocyte Membrane Fluidity in Chicken Muscular Dystrophy," *Life Sci.* **22**, 1783-1788 (1978).

18. **D.A. Butterfield**, J.Q. Oeswein, M.E. Prunty, K.C. Hisle, and W.R. Markesbery, "Increased Sodium Plus Potassium Adenosinetriphosphatase Activity in Erythrocyte Membranes in Huntington's Disease," *Ann. Neurol.* **4**, 60-62 (1978).

19. **D.A. Butterfield**, M.L. Braden, and W.R. Markesbery, "Erythrocyte Membrane Alterations in Huntington's Disease: Effects of γ-Aminobutyric Acid," *J. Supramolec. Struct.* **9**, 125-130 (1978).

20. **D.A. Butterfield**, M.J. Purdy, and W.R. Markesbery, "Electron Spin Resonance, Hematological, and Deformability Studies of Erythrocytes From Patients With Huntington's Disease," *Biochim. Biophys. Acta* **551**, 452-458 (1979).

21. **D.A. Butterfield** and W.R. Markesbery, "Erythrocyte Membrane Alterations in Huntington's Disease," *Adv. Neurol.* **23**, 397-408 (1979).

22. **D.A. Butterfield**, P.K. Leung, W.R. Markesbery, and A. Barbeau, "Evidence for an Altered Physical State of Membrane Proteins in Erythrocytes in Friedreich's Ataxia," *Canadian J. Neurol. Sci.* **6**, 295-298 (1979).

23. J. Ashraf, **D.A. Butterfield**, J. Jarnefelt, and R.A. Laine, "Enhancement of the Yu and Ledeen Gas Chromatographic Method for Sialic Acid Estimation: Use of Methane Chemical Ionization Mass Fragmentography," *J. Lipid Res.* **21**, 1137-1141 (1980).

24. **D.A. Butterfield** and M.A. Fitzpatrick, "Electron Paramagnetic Resonance Investigations of the Effects of Diethylstilbestrol on the Physical State of Membrane Lipids and Proteins," *J. Magnetic Reson.* **37**, 159-163 (1980).

25. W.R. Markesbery, P.K. Leung, and **D.A. Butterfield**, "Spin Label and Biochemical Studies of Erythrocyte Membranes in Alzheimer's Disease," *J. Neurol. Sci.* **45**, 323-330 (1980).

26. **D.A. Butterfield** and W.R. Markesbery, "Specificity of Biophysical and Biochemical Alterations in Neurological Diseases: Huntington's Disease, Friedreich's Ataxia,

Alzheimer's Disease, Amyotrophic Lateral Sclerosis, and Myotonic and Duchenne Muscular Dystrophy," *J. Neurol. Sci.* **47**, 261-271 (1980).

27. **D.A. Butterfield**, P.F. Doorley, and W.R. Markesbery, "Evidence for a Membrane Surface Defect in Erythrocyte Membranes in Huntington's Disease," *Life Sci.* **27**, 609-615 (1980).

28. J.B. Feix and **D.A. Butterfield**, "Selective Spin Labeling of Sialic Acid Residues of Glycoproteins and Glycolipids in Erythrocyte Membranes: A Novel Method to Study Cell Surface Interactions," *FEBS Letts.* **115**, 185-188 (1980).

29. W.A. Bia≈as, W.R. Markesbery, and **D.A. Butterfield**, "Increased Chloride Transport in Erythrocyte Membranes in Huntington's Disease," *Biochem. Biophys. Res. Commun.* **95**, 1895-1900 (1980).

30. **D.A. Butterfield** and W.R. Markesbery, "Huntington's Disease-A Generalized Membrane Defect," *Life Sci.* **28**, 1117-1131 (1981).

31. **D.A. Butterfield**, "Myotonic Muscular Dystrophy: Time-Dependent Changes in Erythrocyte Membrane Fluidity," *J. Neurol. Sci.* **52**, 61-67 (1981).

32. **D.A. Butterfield**, A. Akaydin, and M.L. Kommor, "Electron Spin Resonance Studies of the Effects of Naturally-Occurring Excitotoxic Amino Acid Analogues on the Physical State of Membrane Proteins in Human Erythrocytes," *Biochem. Biophys. Res. Commun.* **102**, 190-196 (1981).

33. **D.A. Butterfield** and W.R. Markesbery, "On the Use of a Piperidine Spin Label to Investigate Membrane Proteins in Erythrocyte Membranes With Reference to Huntington's Disease," *Biochem. International* **3**, 517-525 (1981).

34. **D.A. Butterfield**, "Studies of Membrane Components by Electron Spin Resonance," *Composition and Function of Cell Membranes: Application to the Pathophysiology of Muscle Diseases* (S. Wolf and A.K. Murray, Eds.), Plenum Press, New York, 1981, pp. 191-204.

35. **D.A. Butterfield**, "Spin Labeling in Disease," (Invited Review) in *Biological Magnetic Resonance Vol. IV*, (L.J. Berliner and J. Reuben, Eds.), Plenum Press, New York, 1982, pp. 1-78.

36. **D.A. Butterfield** and M. Shahabbudin, "Reductive Methylation of Membrane Proteins in Human Erythrocyte Ghosts," *Bioscience Reps.* **2**, 235-239 (1982).

37. J.B. Feix, L.L. Green, and **D.A. Butterfield**, "Effects of Phytohaemagglutinin, Wheat-Germ Agglutinin, and Concanavalin-A on the Physical State of Sialic Acid and Membrane Proteins in Human Erythrocyte Ghosts: A Spin Label Study," *Life Sci.* **31**, 1001-1009 (1982).

38. **D.A. Butterfield** and W.R. Markesbery, "Time-Dependence of, and Effects of Inhibition and Cellular Aging on, Chloride Efflux Across Erythrocyte Membranes in Huntington's Disease," *J. Neurol. Sci.* **57**, 29-39 (1982).

39. **D.A. Butterfield**, F.E. Ordaz, and W.R. Markesbery, "Spin Label Studies of Human Erythrocytes in Aging," *J. Gerontol.* **37**, 535-539 (1982).

40. **D.A. Butterfield** and W.R. Markesbery, "Spin Labeling Studies of Membrane Proteins in Erythrocyte Ghosts From Patients With Huntington's Disease," *Neuroscience Letts.* **35**, 221-226 (1983).

41. **D.A. Butterfield**, B.T. Farmer II, and J.B. Feix, "Induced Alterations in the Physical State of Sialic Acid and Membrane Proteins in Human Erythrocyte Ghosts: Implications for the Topology of the Major Sialoglycoprotein," *Ann. NY Acad. Sci.* **414**, 169-179 (1983).

42. J. Ashraf, J.B. Feix, and **D.A. Butterfield**, "Membrane Fluidity and Myotonia: Effects of Cholesterol and Desmosterol on Erythrocyte Membrane Fluidity in Rats With 20,25-Diazacholesterol-Induced Myotonia and on Phospholipid Liposomes," *Bioscience Reps.* **4**, 115-120 (l984).

43. B.T. Farmer II and **D.A. Butterfield**, "Quinolinic Acid, an Endogenous Metabolite With Neurotoxic Properties, Alters the Physical State of Membrane Proteins in Human Erythrocytes," *Life Sci.* **35**, 501-509 (1984).

44. B.T. Farmer II and **D.A. Butterfield**, "Selective Spin Labeling of Terminal Galactose and N-Acetylgalactosamine Residues on the Membrane Surface of Erythrocytes," *J. Biochem. Biophys. Meth.* **10**, 111-120 (1984).

45. B.T. Farmer II and **D.A. Butterfield**, "The Alteration of Membrane Proteins in Human Erythrocyte Membranes Induced by Quinolinic Acid, An Endogenous Neurotoxin: Correlation of Effect With Structure," *Biochim. Biophys. Acta* **778**, 260-268 (1984).

46. B.T. Farmer II and **D.A. Butterfield**, "2,2,6,6-Tetramethyl-4-Amino(d_{17})-Piperidine-^{15}N-1-oxyl as a Spin Label of Cell Surface Carbohydrates," *Anal. Letts.* **18**, 555-561 (1985).

47. **D.A. Butterfield**, "The Relationship of Membrane Fluidity to Degenerative Muscular Diseases," (Invited Review) in *Membrane Fluidity in Biology: Vol. 3; Disease Processes*, (R.C. Aloia and J. Boggs, Eds.), Academic Press, New York, 1985, pp. 161-255.

48. **D.A. Butterfield**, M.N. Nicholas, and W.R. Markesbery, "Evidence for an Increased Rate of Choline Efflux Across Erythrocyte Membranes in Alzheimer's Disease," *Neurochem. Res.* **10**, 909-918 (1985).

49. **D.A. Butterfield**, B.T. Farmer II, and W.R. Markesbery, "Alzheimer's Disease: No Alteration in the Physical State of Erythrocyte Membrane Glycoconjugates," *Ann. Neurol.* **18**, 104-105 (1985).

50. B.T. Farmer II, T.M. Harmon, and **D.A. Butterfield**, "ESR Studies of the Erythrocyte Membrane Skeletal Protein Network: Influence of Spectrin on the Physical State of Membrane Proteins, Bilayer Lipids, and Cell Surface Carbohydrates," *Biochim. Biophys. Acta* **821**, 420-430 (1985).

51. **D.A. Butterfield**, "Spectroscopic Methods in Degenerative Neurological Diseases," (Invited Review) *Critical Reviews of Neurobiology Vol. 2*, (Allen D. Roses, ed.), CRC Press, Boca Raton, FL, 1986, pp. 169-240.

52. **D.A. Butterfield**, J.W. Wyse, V.L. Abbott, and A.J. Nonneman, "Spin Labeling Studies of the Interaction of Dicarboxylic Acid Neurotoxins With Human Erythrocyte Membranes.

IV: Effects of Maleic, Succinic, Fumaric, and Cyclic Non-Aromatic Acids," *Biochem. Arch.* **2**, 245-252 (1986).

53. M. Jay, S.M. Stuart, C. McClain, D. Palmieri, and **D.A. Butterfield**, "Alterations in Lipid Membrane Fluidity and the Physical State of Cell-Surface Sialic Acid in Zinc-Deficient Rat Erythrocyte Ghosts," *Biochimica et Biophysica Acta* **897**, 507-511 (1987).

54. J.W. Wyse, R. Barker, R.S. Franco, O. Martelo, and **D.A. Butterfield**, "Electron-Spin Resonance (ESR) Studies of Skeletal Protein Interactions in Human Erythrocyte Membranes Exposed to Polyanions and in Membranes Prepared From Inositol Hexaphosphate (IHP)-Incorporated Low-Affinity Erythrocytes," *Biochem. Biophys. Res. Commun.* **144**, 779-786 (1987).

55. J.W. Wyse and **D.A. Butterfield**, "ESR Studies of the Effect of Experimental Variables on RBC Membranes: The Physical State of Cell-Surface Sialic Acid," in *Membrane Proteins* (S.C. Goheen, ed.), Bio-Rad Publishing Co., New York, 1987, pp. 267-277.

56. **D.A. Butterfield**, W.T. Smith, Jr., D.A. Palmieri, W. Kluttz, and E.L. Barnes, "New Concept in Multi-Agent Surface Decontamination of Aircraft," *Chem. Def. Res.* **2**, 847-855 (1987).

57. **D.A. Butterfield**, "Polyamines and Polyphosphates Affect the Structure of the Skeletal Protein Network and Cell-Surface Carbohydrates in Human Erythrocyte Membranes: An Electron Spin Resonance Study," *Proceedings of the 1987 International Congress on Membranes and Membrane Processes* (M. Nakagaki and E. Drioli, Eds.), Tokyo, 1987, pp. 194-195.

58. **D.A. Butterfield** and W.R. Markesbery, "Benzodiazepine Receptors in Huntington's Disease," *Neurology* **38**, 508-509 (1988).

59. J.W. Wyse and **D.A. Butterfield**, "Electron Spin Resonance and Biochemical Studies of the Interaction of the Polyamine, Spermine, With the Skeletal Network of Proteins in Human Erythrocyte Membranes," *Biochim. Biophys. Acta* **941**, 141-149 (1988).

60. J.W. Wyse and **D.A. Butterfield**, "Lipid-Specific Spin Labeling of Erythrocyte Membranes: Development and Characterization of a New Labeling Procedure for a Cationic Spin Label, CAT-16," *Analyt. Letts.* **21**, 1131-1140 (1988).

61. A.J. Nonneman, T. Elder, B.T. Farmer II, and **D.A. Butterfield**, "Hippocampal Neurotoxicity Produced by Quinolinic Acid and Related Neurotoxins," *Biochemical Archives* **4**, 209-215 (1988).

62. W.T. Smith, Jr., E.L. Barnes, D.A. Palmieri, and **D.A. Butterfield**, "A Multicomponent Decontamination System: Studies of Component Compatibility and Effectiveness," *Chem. Def. Res.* **1**, 547-556 (1988).

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Grants and Contracts

1. "ESR Studies of Erythrocyte Membrane Structure: Use of Myotonic Muscular Dystrophy as a Perturbant of Protein-Protein and Protein-Lipid Interactions," The Research Corporation, $5000, 1975 - 1979, funded.

2. "Protein-Protein and Protein-Lipid Interactions in Erythrocyte Membranes in Myotonic and Duchenne Muscular Dystrophy," The Muscular Dystrophy Association of America, $107,992, 1976 - 1981, funded.

3. "Membrane Alterations in Huntington's Disease," National Institutes of Health, $125,000, 1978 - 1982, funded.

4. "Research on Erythrocyte Membranes in Friedreich's Ataxia," L'Association Candienne de L'Ataxia de Friedreich, $18,000, 1978, funded.

5. "Aging Pathology in Neural and Extraneural Tissue," Co-Investigator, The National Institutes of Health, $177,803, 1981 - 1984, funded.

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9. "Choline Transport Alterations in Alzheimer's Disease," The National Alzheimer's Disease and Related Disorders Association, $12,000, 1984 - 1985, funded.

10. "A New Concept in Multi-Component Decontamination of Aircraft," The U. S. Department of Defense, $238,647, 1985 - 1988, funded.

11. "Membrane Studies of Diphenylhydantoin in Sickle Cell Disease," The Dreyfus Medical Foundation, $7,500, 1985 - 1986, funded.

12. "Multidisciplinary Membrane Science Research on the Structure, Function, and Properties of Biological and Synthetic Membranes," The National Science Foundation, $2,068,694, 1986 - 1991, funded.

13. "Nicotine and Neutrophils in Heart Disease - Role of Membrane Fluidization," The Tobacco and Health Research Institute, $99,000, 1986 - 1989, Co-I with M. Jay, P. I., funded.

14. "Are there Membrane Skeletal Protein Alterations in Alzheimer's Disease?," The Sanders-Brown Research Center on Aging, $2,500, 1986 - 1988, funded.

15. "Research Experiences for Undergraduates in Membrane Science," The National Science Foundation, $20,000, 1988 - 1991, funded.

16. "Science and Technology Center Planning Grant in Membrane Sciences," National Science Foundation, $35,000, 1989 - 1990, funded.

17. "Research Experiences for Undergraduates in Membrane Sciences at the University of Kentucky," National Science Foundation, $77,000, 1989 - 1991, (Co-I with L. Bachas, PI), funded.

18. "Acquisition of a High-Field Nuclear Magnetic Resonance Spectrometer," (Co-PI with J. Selegue, PI), The National Science Foundation, $93,046, 1991, funded.

19. "Biofunctional Membranes. Synthesis, Structure, and Function," The National Science Foundation, $1,439,000, 1992 - 1996, funded.

20. "Research Experiences for Undergraduates in Membrane Sciences," (Co-PI with L. Bachas, PI), The National Science Foundation, $129,135, 1992 - 1995, funded.

21. "Calcium Regulation in Brain Aging and Alzheimer's Disease," (Co-PI with P. Landfield, PI), The National Institutes of Health, $4,000,000 of which $585,000 is for Component #4: "Free Radical Effects on Ca Homeostasis and Neuronal Toxicity," 7/1/92 - 6/30/98, funded.

22. "Membrane-Supported, Highly-Ordered Materials for Bioreactors," The National Science Foundation, $270,000, 11/1/94 - 10/31/97, funded.

23. "Research Experiences for Undergratuates in Membrane Sciences," (Co-PI with L. Bachas, PI), The National Science Foundation, $142,000, 1/1/95 - 12/31/97, funded.

24. "Brain Oxidation in the Pathogenesis of Alzheimer's Disease," (Co-PI with W. R. Markesbery, PI), National Institutes of Health, $3,000,000, 9/1/96 - 3/31/01, funded.

25. "β-Amyloid Peptide Free Radical Production/Neurotoxicity," NIH/NIA, $811,926 (Direct plus Indirect), 1996 - 2001, funded.

26. "Biomolecular-Based Functional Materials: Relevance to DoD Hazardous Substances," The U. S. Department of Defense, $347,142, 11/14/97 - 11/13/00, funded.

27. "Research Experiences for Undergraduates in Polymers and Thin Films," (Co-PI with L. Bachas, PI), The National Science Foundation, $141,521, 2/1/98 - 1/31/01, funded.

28. "Ca^{2+} Regulation in Brain Aging and Alzheimer's Disease," (Co-PI with P. Landfield, PI), National Institutes of Health, $778,443 (Direct), 7/1/98 - 6/30/03, funded.

29. "Transgenic C. elegans as Alzheimer's Disease Model," (Co-PI with Christopher Link, PI), NIH/NIA, $100,000, 1999 - 2002, funded.

30. "Presidential Award for Excellence in Science, Mathematics, and Engineering Mentoring," National Science Foundation, $10,000, 1998 - 2002, funded.

31. "Support for 2nd National Meeting of Recipients of the Presidential Award for Excellence in Science, Mathematics and Engineering Mentoring to be held in Lexington, KY in November, 2001," (D. A. Butterfield, PI), National Science Foundation, $18,000, 2001-2003, funded.

32. "Oxidative Stress in Alzheimer's Disease," (D. A. Butterfield, PI, Project 2; W. R. Markesbery, Overall PI), National Institutes of Health, $1,164,240 (Project 2), 3/1/02 - 2/28/08, funded.

33. "Selegeline, Oxidative Stress and MRS in HIV Dementia," (Co-PI with Avindra Nath, PI), University of Rochester - NIH, $292,745, 10/28/01 - 10/27/04, funded.

34. "Pathogenesis of Peripheral Neuropathy with HIV Infection," (Co-PI with Avindra Nath, PI), National Institutes of Health, $1,250,000 (Direct), 7/1/02 - 6/30/07, funded.

35. "Role of Acetyl-L-Carnitine in the Cellular Stress Response During Aging: Relevance to Age-Related Neurodegenerative Disorders," Sigma Tau Pharmaceutical Corporation, Rome, ITALY, $60,000, 1/03/03 - 1/03/04, funded.

36. "Support for 2nd National Meeting of Recipients of the Presidential Award for Excellence in Science, Mathematics and Engineering Mentoring," (D. A. Butterfield, PI), National Science Foundation, $3,000, 2003-2004, funded.

37. "Ca^{2+} Regulation in Brain Aging and Alzheimer's Disease," (Co-PI with P. Landfield, PI), National Institutes of Health, $440,000 (Direct), 2004-2009, funded.

38. "Oxidative Dysfunction of LRP at the Blood-brain Barrier in Alzheimer's Disease," (Co-PI with William Banks, PI), National Institutes of Health, $1.51 Million; 2008-2013, funded.

39. "Safety/Toxicity Assessment of Ceria (a Model Engineered NP) to the Brain," (Co-PI with Robert Yokel, PI), National Institute of Environmental Health Sciences, $2.07 Million,. 2008-2013, funded.

40. "Oxidative Stress in Alzheimer's Disease," (D. A. Butterfield, PI, Project 2; W. R. Markesbery, Overall PI), National Institutes of Health, $1.64 Million for Project 2, 3/1/08-2/28/14, funded.

41. "Redox Proteomics Analysis of the Senescence-Accelerated Prone Mouse (SAMP8) as a Model of Immunosenescence," (PI), UNCF/Merck Minority Postdoctoral Fellowship for Dr. Rena Sowell, $81,666, 9/1/08-12/31/09, funded.

42. "Environmental Behavior and Bioavailability of Ag and CeO_2 Nanoparticles: The Role of Surface Functionalization and its Interaction with Natural Organic Substancances and Iron Oxohydroxides." (J. Unrine, PI; D. Allan Butterfield, Co-PI), Environmental Protection Agency/National Science Foundation, $599,840, 9/2010-8/2015, funded.

43. "Trial of Mesna to Prevent Doxorubicin-induced Plasma Protein Oxidation and TNF-a Release," Co-PI, (with Dr. Jeffrey Moscow, PI), National Institutes of Health (1RO1-CA148341), $622,500 (Direct Costs), 8/1/2010-5/30/2014, funded.

44. "Cancer Center Support Grant," Director of Free Radical Biology in Cancer Shared Resource Facility (with Dr. B. Mark Evers, PI), 1P30CA177558, $7,000,010, 7/8/13-6/30/18, funded.

45. "Chemotherapy Induced Cognitive Impairment: A Novel Prospective Study of the Cognitive Effects of Platinum/Taxane Chemotherapy in Ovarian Cancer Patients," Co-I, with Dr. Rachel Miller, PI), Army Medical Research and Materiel Command, W81XWH-15-100091, $210,120., 9/1/15-8/31/17, funded.

46. "Reconciling Nanoceria's Jekyll and Hyde Reputation: Toward Safer Nanotherapy," Co-PI (with Dr. Robert A. Yokel, PI), 1R01 GM109195-01A1, $1.5 Million, 5/1/15-4/30/19, funded.

47. "Cancer Center Support Grant," Director of Redox Metabolism Shared Resource Facility (with Dr. B. Mark Evers, PI), 2P30CA177558, $11,000,010, 7/1/18-6/30/23, funded.

48. "Charaterization of the Fidelity to PD of a Unique Rat Model," PI, NIH 1R21 NS094891, $414,875, 9/1/15-8/31/20, funded.

49. "A Redox-mediated Mechanism of Chemotherapy-induced Cognitive Impairment," I am PI on this Multiple PI proposal., NIH 1 R01 CA217934-01, $2.3 Million, 2017-2023.

50. "APOE and the PPP: Glucose Metabolism and Oxidative Stress in Alzheimer's Disease," (Co-I, with Dr. Lance Johnson,PI), NIH 1R01 AG060056, $2.48 Million, 8/15/18-5/31/23, funded.

51. "mTOR activation and the pathogenesis of Alzheimer disease in Down syndrome," I am PI on this multiple PI proposal. 1 R56 AG055596-01A1, $566,205, 9/30/18-8/31/20, funded.

52. Supplement to "A Redox-mediated Mechanism of Chemotherapy-induced Cognitive Impairment," I am PI on this Multiple PI proposal., NIH 3 R01 CA217934-02S1, $375,000, 9/1/18-8/31/19, funded.

53. "Chemotherapy induced cognition impairment – Mechanisms and Prevention," Co-I, Project 4. Kentucky Pediatric Cancer Research Trust Fund, $450,000, 7/1/18-6/30/20, funded.

54. "UK FIRST." I am Co-Investigator on this proposal designed to increase promotion of URM faculty at UK. Submitted 2022. Dr. Lisa Cassis is overall PI on this proposal to NIH. Declined.

Patents

1. K. Hensley, **D.A. Butterfield**, J.M. Carney and M. Aksenov, "Process for Enhancing the Activity of Amyloid β Peptides," U. S. Patent No. 5,840,838, Issued November 24, 1998.

2. P.A. Crooks, A.A. Houdi, S.G. Kottayil and **D.A. Butterfield**, "Morphine-6-Sulfate Analogues and Their Use for the Treatment of Pain," U. S. Patent No. 6,403,602, Issued June 11, 2002.

SUPPLEMENTAL VITA

D. Allan Butterfield

Papers Presented at Professional Meetings

Southeast Regional American Chemical Society, 1975, Memphis, TN.

Gordon Conference on Magnetic Resonance in Biology and Medicine, (Invited Speaker), 1976, Tilton, NH.

Hereditary Disease Foundation, (Invited Speaker), 1977, Los Angeles, CA.

ACS National Meeting, 1977, New Orleans, LA.

World Federation of Neurology Subgroup on Huntington's Chorea, (Invited Speaker), 1977, Leiden, The Netherlands.

International Symposium on ESR in Disease States, (Invited Speaker), 1977, Manchester, England.

Symposium of Biophysical Approaches to Biological Problems, (Invited Speaker, Session Chairman), 1977, Columbia, MO.

Hereditary Disease Foundation, (Invited Speaker), 1978, Washington, DC.

Symposium on Normal and Abnormal Red Cell Membranes, (Invited Speaker), 1978, Keystone, CO.

Symposium on Current Topics in Biological Chemistry, 1978, ACS National Meeting, Miami Beach, FL.

NIH International Symposium on Huntington's Disease, (Invited Speaker), 1978, La Jolla, CA.

Southeast Magnetic Resonance Society, (Invited Speaker), 1978, Knoxville, TN.

World Federation of Neurology, (Invited Speaker), 1979, Oxford, England.

American Neurological Association, (Invited Paper), 1979, St. Louis, MO.

Southeastern ACS Meeting, (Symposium Paper), 1979, Roanoke, VA.

ACS National Meeting, 1980, Houston, TX.

Gordon Research Conference on Magnetic Resonance in Medicine and Biology, (Invited Speaker), 1980, Tilton, NH.

Colloquium on Membranes and Muscular Dystrophy, (Invited Participant), 1980, Tott's Gap, PA.

6th International Scientific Conference on Muscular Dystrophy, (Invited Participant), 1980, Key Biscayne, FL.

Symposium on a Membrane Defect in Huntington's Disease, (Invited Participant), 1980, Minneapolis, MN.

Southeast-Southwest ACS Meeting, 1980, New Orleans, LA.

American Association of Aging, National Meeting, (Invited Speaker), 1981, New York, NY.

Southeastern Magnetic Resonance Society, (Session Chairman), 1981, Durham, NC.

Southeastern Regional American Chemical Society, 1981, Lexington, KY.

NSF Workshop on Cell Membranes, (Invited Speaker), 1982, New York, NY.

Gordon Research Conference on Magnetic Resonance in Medicine and Biology, 1982, Tilton, NH.

Southeastern Magnetic Resonance Conference, (Invited Plenary Speaker), 1983, Johnson City, TN.

American Academy of Neurology, (Selected Paper), 1984, Boston, MA.

8th International EPR Conference, (Invited Speaker), 1985, Denver, CO.

4th Conservative Health Conference, (Invited Plenary Speaker), 1985, Santa Clara, CA.

Canadian Federation of Biological Societies National Meeting, (Invited Plenary Speaker), 1986, Guelph, Ontario.

Southeastern Regional American Chemical Society, 1986, Louisville, KY.

National Conference on Chemical Decontamination, 1986, Aberdeen Proving Ground, MD.

Membrane Protein Symposium, 1986, San Diego, CA.

American Society of Hematology National Meeting, (Selected Paper), 1986, San Francisco, CA.

Department of Defense Conference on Catalytic Decontamination, 1987, Oxford, AL.

Southeastern Magnetic Resonance Conference, 1987, Reserch Triangle Park, NC.

National Conference on Chemical Decontamination, 1987, Aberdeen Proving Ground, MD.

American Society of Hematology National Meeting, (Selected Paper), 1987, Washington, DC.

North American Membrane Society National Meeting, (Invited Speaker), 1988, Syracuse, NY.

International Conference on Biological and Synthetic Membranes, 1988, Lexington, KY.

International Membrane Technology Conference, (Invited Speaker), 1988, Sydney, Australia.

UCLA Symposium on Cellular and Molecular Biology of Normal and Abnormal Erythroid Membranes, (Selected Paper), 1989, Taos, NM.

Second International Symposium on Spin Trapping and Aminoxyl Radical Chemistry, (Invited Plenary Speaker), 1989, University of Guelph, Ontario, Canada.

Kentucky Academy of Science, 1989, Lexington, KY.

International Congress on Membranes, (Invited Symposium Organizer), 1990, Chicago, IL.

American Chemical Society National Meeting, (Invited Symposium Speaker), 1990, Boston, MA.

Second International Conference on Alzheimer's Disease, (Selected Paper), 1990, Toronto, Ontario, Canada.

Midwest Regional American Chemical Society, 1991, Indianapolis, IN.

American Chemical Society, National Meeting, 1991, New York, NY.

American Institute of Chemical Engineers Summer National Meeting, 1991, Pittsburgh, PA.

International Conference on ESR and Applications to Chemistry, Physics, and Biology, (Invited speaker), 1991, Padova, Italy.

Central Regional American Chemical Society, (Symposium Speaker), 1992, Cincinnati, OH.

Third International Conference on Alzheimer's Disease, (Invited Speaker), 1992, Montegrotto Terme, Padova, Italy.

North American Membrane Society Fifth Annual Meeting, (Organizer), 1992, Lexington, KY.

Membrane Conference on Technology/Planning, (Invited Speaker), 1992, Boston, MA.

Southeast Magnetic Resonance Conference, 1992, Raleigh, NC.

The Oxygen Society National Meeting, 1993, Charleston, SC.

Society for Neurosciences National Meeting, 1993, Washington, DC.

American Institute of Chemical Engineers National Meeting, 1993, St. Louis, MO.

Institute of Food Technology National Meeting, 1993, Chicago, IL.

FASEB National Meeting, 1993, New Orleans, LA.

Biophysical Society National Meeting, 1993, Washington, DC.

Atlantic Fisheries Conference, 1994, Gloucester, MA.

American Chemical Society National Meeting, (Invited Symposium Speaker for 2 Sessions), 1994, San Diego, CA.

Fourth International Conference on Alzheimer's Disease, 1994, Minneapolis, MN.

North American Membrane Society National Meeting, 1994, Breckenridge, CO.

First International Conference on Oxidative Stress and Aging, 1994, Kailua-Kona, HI.

Society for Neuroscience National Meeting, 1994, Miami, FL.

International Congress on Toxicology, 1995, Seattle, WA.

International Conference on Biofunctional Membranes, 1995, Lexington, KY.

North American Membrane Society National Meeting, 1995, Portland, OR.

Association for Research in Otolargngology, 1995, St. Petersburg Beach, FL.

American Chemical Society National Meeting, 1995, Anaheim, CA.

International Congress on Toxicology, 1995, Seattle, WA.

FASEB Summer Research Conference on Amyloid, 1995, Copper Mountain, CO.

American Aging Association National Meeting, 1995, San Antonio, TX.

Combined Southeast/Southwest American Chemical Society Meeting, 1995, Memphis, TN.

Pacifichem '95, Pacific Basin Chemical Societies International Meeting, 1995, Honolulu, HI.

Society for Neuroscience, 1996, Washington, DC.

American Chemical Society National Meeting, (Invited Speaker and Session Chair), 1997, San Francisco, CA.

Keystone Conference on Molecular Mechanisms in Alzheimer's Disease, 1997, Tamarron, CO.

International Conference on Free Radicals: Prospects for Therapeutic Strategies, (Invited Speaker at the Royal Society), 1997, London, England.

Scientific and Education Partnership/Amyotrophic Lateral Sclerosis International Meeting, (Invited Speaker), 1997, Kansas City, MO.

Society for Neuroscience, 1997, New Orleans, LA.

Second Biology of Aging Symposium, 1997, Lexington, KY.

Symposium on Nitrone Mechanisms, 1997, Sunnyvale, CA.

American Chemical Society Memphis Section Award Ceremony, 1997, Memphis, TN.

Army Research Office Workshop on Biomolecular Signaling, Energy, Transfer, and Transduction Processes, Physiology and Performance, 1998, Cashiers, NC.

6th International Conference on Alzheimer’s Disease, 1998, Amsterdam, The Netherlands.

American Chemical Society National Meeting, (Invited Symposium Speaker), 1998, Boston, MA.

Cambridge Health Institute Conference on Aging and Age-Related Neurodegenerative Diseases," (Invited Speaker), 1998, San Diego, CA.

American Chemical Society S. E. Regional Meeting, 1998, Research Triangle Park, NC.

Society for Neuroscience National Meeting, 1998, Los Angeles, CA.

New York Academy of Sciences Conference on Oxidative Energy Metabolism in Neurodegenerative Disorders," 1999, New York, NY.

International Conference on New Frontiers for Catalytic Biofunctional Membranes, 1999, Ravello, Italy.

Society for Neuroscience National Meeting, 1999, Miami Beach, FL.

American Chemical Society Central Regional Meeting, (Invited Speaker), 2000, Covington, KY.

6th Kentucky EPSCoR Conference, 2000, Frankfort, KY.

North American Membrane Society National Meeting, 2000, Boulder, CO.

Italian Society for Neuropsychopharmacology, (Invited Lecture), 2000, Calgiari, Sardinia, Italy.

7th International Conference on Alzheimer's Disease and Related Disorders, 2000, Washington, DC.

American Institute of Chemical Engineers National Meeting, 2000, Los Angeles, CA.

Society for Neuroscience National Meeting, 2000, New Orleans, LA.

Pacifichem 2000, Pacific Basin Chemical Societies International Meeting, 2000, Honolulu, HI.

Winter Conference on Brain Research, 2001, Steamboat Springs, CO.

European Society for Neurochemistry, (Invited Speaker), 2001, Perugia, Italy.

American Chemical Society 222nd National Meeting, 2001, Chicago, IL.

Conference on Challenging Views of Alzheimer's Disease, 2001, Cincinnati, OH.

American Institute of Chemical Engineers National Meeting, 2001, Las Vegas, NV.

Federation of Analytical Chemistry and Spectroscopy Societies 28th National Meeting, 2001, Detroit, MI.

Society for Neuroscience 31st National Meeting, 2001, San Diego, CA.

2nd National Conference on Brain Aging, (Invited Symposium Speaker), 2001, San Diego, CA.

International Task Force on Antioxidants, (Task Force Chairman), 2001, Rome, Italy.

Symposium on Oxidative Stress and Nutrition, (Invited Symposium Speaker), 2002, Lexington, KY.

HO/CO and Oxidative Stress International Conference, 2002, Catania, Italy.

First Asian-Pacific Conference on Anti-Aging, (Invited Speaker), 2002, Singapore.

8th International Conference on Alzheimer's Disease, 2002, Stockholm, Sweden.

Society for Neuroscience, 2002, Orlando, FL.

Conference on Anti-Aging Medicine, 2002, Las Vegas, NV.

NIH Workshop on Proteomics in Aging, (Invited Speaker), 2002, Bethesda, MD.

Winter Conference on Brain Research, (Invited Speaker), 2003, Snowbird, UT.

North American Membrane Society, National Meeting, 2003, Jackson Hole, WY.

8th International Conference on Amino Acids and Proteins, 2003, Rome, Italy.

Society for Neuroscience National Meeting, 2003, New Orleans, LA.

Gerontological Society of America, 2003, San Diego, CA.

6th Portuguese Congress on Free Radicals in Chemistry, Biology, and Medicine, 2003, Coimbra, Portugal.

Debates on Challenging Views of Alzheimer's Disease II, 2003, Cincinnati, OH.

Society for Free Radical Research-Europe, 2003, Ioannina, Greece.

Society for Free Radical Research National Meeting, 2003, Seattle, WA.

3rd Pacific Anti-Aging Conference, 2004, Singapore.

NSF/HRD Conference, 2004, Arlington, VA.

UCLA Proteomics Conference, 2004, Los Angeles, CA.

9th International Congress on Alzheimer's Disease, 2004, Philadelphia, PA.

7th National Biotechnology Conference, 2004, Catonia, Italy.

1st Mediterranean Anti-Aging Conference, 2004, Catonia, Italy.

Society for Neuroscience National Meeting, 2004, San Diego, CA.

International Conference on Mitochondria, 2005, Bari, Italy.

Camillio Golgi International Symposium on Neuroscience, (Invited Speaker), University of Brescia, Brescia, 2006, Italy.

Italian Society of Biochemistry and Molecular Biology National Meeting, (Invited Plenary Speaker), 2006, Riccione, Italy.

4th International Conference on Brain Aging and Dementia, (Invited Speaker), University of Perugia, 2006, Perugia, Italy.

Southeast Regional Meeting of the American Chemical Society (Invited Symposium Speaker), 2006, Augusta, GA.

American Association for Cancer Research National Meeting, 2006, Washington, DC.

Oxygen Club of California National Meeting (Invited Speaker), 2008, Santa Barbara, CA.

International Confernce on Alzheimer's Disease, 2008, Chicago, IL.

Brain Mind Asia Pacific Conference, 2008, Singapore.

Society for Free Radical Biology and Medicine National Meeting (Invited Speaker), 2008, Indianapolis, IN

First International Symposium on Neuroprotection (Invited Speaker), 2009, Brescia, Italy

Gordon Research Conference on Oxygen Radicals (Invited Speaker), 2010, Ventura, CA.

US Human Proteomics Conference (Invited Speaker), 2010, Denver, CO.

Bayer Conference on Neuroprotection (Invited Speaker), 2010, Berkeley, CA.

Forget-Me-Not Symposium on Chemobrain (Invited Speaker), Philadelphia, PA., 2010

Society for Free Radical Biology and Medicine (Invited Speaker), San Diego, CA 2012

Gerontology Association of American National Meeting (Invited Speaker), San Diego, CA 2012

International Conference on Alzheimer Disease and Parkinson Disease, Florence, Italy, 2013

23rd North American Catalysis Socieity National Meeting, March 2013.

Socieity for Toxicology National Meeting, July 2013.

20th Annual Meeting of the Society for Free Radical Biology and Medicine, San Antonio, TX, Nov. 20-23, 2013.

21st Annual International Conference on Composites or Nano Engineering), Tenerife, Canary Islands, Spain, July 21-27, 2013.

Down Syndrome Symposium, Cambridge, England, March 29, 2014.

Ninth Annual Oncology Symposium of the Norton Cancer Institute, Louisville, KY April 10, 2014.

Nanotoxicology Conference, Antalya, Turkey, April 23-26, 2014.

National Conference on Undergraduate Researach, Lexington, KY, April 2014.

15th Alzheimer's Association International Conference, Copenhagen, Denmark, July 16-20, 2014.

American Association of Cancer Research, Los Angeles, CA, July 2014.

Glycobiology and Molecular Neurobiology Conference, Germany, September, 2014.

Nebraska Redox Biology Center 12th Annual Symposium, November 14, 2014.

21st National Meeting of the Society for Free Radical Biology and Medicine, Seattle, WA, November (2014).

American Transplantation Conference, Philadelphia, PA, May 2-6 (2015.

Down Syndrome International Conference, Paris, France, July 2015

Retrotope Lipid Peroxidation Roundtable, Nashville, TN, September 2015

Down Syndrome Research Conference, Little Rock, AR, September 2015

22nd National Meeting of the Society for Free Radical Biology & Medicine, Boston, MA, November 2015.

8th International Nanotoxicology Congress, Boston, MA, June 1-4, 2016.

23rd National Meeting of the Society for Redox Biology & Medicine, San Francisco, CA, November 16-19, 2016.

NIA Workshop on Development of Human Aging Mechanistic Predictive Markers, Bethesda, MD, December 12-14, 2016.

Grand Rounds, UK College of Medicine, Lexington, KY, March 29, 2017

AD/PD Conference, Vienna, Austria, March 31, 2017

24th National Meeting of the Society for Redox Biology & Medicine, Baltimore, MD, Nov. 24, 2017.

Society for Toxicology National Meeting, San Antonio, TX, March 11-15, 2018.

North American Membrane Society National Meeting, Lexington, KY, June 10-13, 2018.

Kentucky Neuroscience Institute Annual Symposium, Lexington, KY, October 5, 2018.

11th International Conference on HNE (Invited Speaker), Nashville, TN, Nov. 11, 2018.

25th National Meeting of the Society for Redox Biology & Medicine, Chicago, IL, Nov. 14, 2018.

American Association of Cancer Research National Meeting, Atlanta, GA, March 29-April 3, 2019.

First International Conference on Sun Exposure and Human Health, Washington, DC, May 6-7, 2019.

Symposium in Honor of Mark Mattson's Contributions to Science (So Far..): Pathways Toward and Away from Brain Health (Invited Plenary Speaker), Baltimore, MD, June 3, 2019.

3rd International Conference of the Trisomy 21 Research Society, Barcelona, Spain, June 6-9, 2019.

Linus Pauling Institute 10th International Conference and SfRBM Regional Symposium (Invited Speaker), August 14-16, 2019.

Society for Redox Biology and Medicine (Selected Oral Presentation and Session Chair), Las Vegas, NV, Nov. 20-23, 2019.

Society for Redox Biology and Medicine (Selected Oral Presentation and Session Chair), Las Vegas, NV, Nov. 20-23, 2019.

Society for Redox Biology and Medicine, Orlando, FL, Nov. 18-20. 2020 (Virtual).

Society for Redox Biology and Medicine, Savanah, GA, November 15-18, 2021 (Virtual).

Society for Redox Biology and Medicine, Orlando, FL, November 16-19, 2022.

Society for Redox Biology and Medicine/Society for Free Radical Research International, Punte del Estes, Uruguay, Nov. 15-18, 2023.

5th International Ts21 Research Conference on Down Syndrome, Rome, Italy, June 5-8, 2024

Society for Redox Biology and Medicine, Savannah, GA, November 20-23, 2024.

Sabbatical Leaves

Spring semester, 1982. Department of Biochemistry, St. Jude Children's Research Hospital, Memphis, Tennessee. (Purpose: To learn techniques useful in the study of protein interaction and topology in cell membranes).

Committees

A. University

Graduate School Fellowship Selection Committee, 1978-80

Graduate Council Committee on Fellowships and Traineeships, 1979-80, 2003-present

University Biohazards Review Committee, 1979-81

Institutional Self Study Committee on Planning for the Future, 1981

Graduate School Major Research Equipment Committee, 1982

Graduate School Research Committee, 1983-85

Animal Care Committee, Lexington Campus Subcommittee, 1984-87

University Senate, 1985-88, 1990-1993

Committee on Orientation and Training of Foreign Teaching Assistants, 1985

Overview Committee, Center on Biotechnology, 1986-

Bond Issue Equipment Review Committee, 1987
Chairman Search Committee, Department of Chemical Engineering, 1988-89

College of Pharmacy Review and Evaluation Committee, (Chair) 1988-89

Graduate School Acting Dean Search Committee, 1988

University Senate Committee on Academic Facilities, 1990-91, 1991-92

University Appeals Board, 1991-94

Major Research Equipment Committee, 1991-92

Tobacco and Health Research Institute Review and Evaluation Committee, 1992-93

Research and Graduate Studies Sector Restructuring Steering Committee, 1992-93

Centers and Institutes Faculty Focus Group, 1992-93

Chancellor's Ad-Hoc Committee on Appeals of Faculty Merit Rating, (Chair) 1993

Vice-President for Research and Graduate Studies' Ad-Hoc Committee on Intellectual Property Rights, 1993

Summer Faculty Research Award Committee, 1994, 1996-98, (Chair) 1997, 1998

Dean of the College of Arts and Sciences Search Committee, 1997-98

Conflict of Interest Committee, 1998-01

Chancellor's External Scholarship Committee, 1998-99

University Commencement Faculty Marshall, 1999, 2000, 2001

Faculty Committee for University of Kentucky Reaccreditation br SACS, 2000-01

College of Pharmacy Faculty Search Committee, 2001-02

President's Commission on Top-20 Public University Criteria, 2002-2003

Executive Vice President for Research Committee on Faculty Summer Research, 2003-present

Academic Area Advisory Committee for Biological Sciences, 2006-08 (Chair, 2007-08); 2009

Provost Appeals Committee on Merit Ratings, 2006

Graduate School Incoming Student Fellowship Committee, 2004-06

Center for Clinical and Translational Science, Co-Director for Translational Technologies & Resources, 2008-present

Kirwan Memorial Prize Committee, Chairperson, 2010-2011

Neuroscience Undergraduate Major Advisory Panel, 2014- present

VPR Committee: Service Core Scientific Oversight Committee, 2014- present

VPR Committee: Design Team Selection Committee for Research Building #2, 2015-2016.

VPR Committee: Chair, Search Committee for Director, Center of Computational Sciences, 2016.

VPR Committee: Chair, Task Force on Polices and Procedures for Formation of New Centers and Institutes That Report to the Vice President for Research, 2016.

VPR New Centers and Institutes Competition Committee, 2017.

VPR Committee: Co-Chair of Committee on Policies to Launch Research Priority Areas, 2018-present.

VPR Research Stragegic Plan Committee, 2021-present.

President's Sustainability Advisory Committee, 2021-present.

B. College of Arts and Sciences

Dean's Committee on Long-Range Planning for the College of Arts and Sciences, 1978-79

Review Committee for Department of Mathematics, 1983-84

Phi Beta Kappa Membership Committee, 1984-85

Review Committee for School of Biological Sciences, 1985-86, (Chair) 1989-90

ODK Maurice A. Clay Award Committee, 1988

Phi Beta Kappa Writing Competition Committee, 1990

College of Arts and Sciences Academic Area Advisory Committee on Promotion and Tenure, 1991-93, 1999-00

College of Arts and Sciences Faculty Retreat, 1992, 1995

College of Arts and Sciences Frontiers of Learning Invited Lecture, "Alzheimer's Disease and Free Radicals," 1999

Chairperson Search Committee, Department of Chemistry, 2001

College of Arts and Sciences Committee on Named Professorships and Chairs, 2003-present

Review Committee for Department of Biology, (Chair) 2005

College of Arts and Sciences Dean’s Advisory Committee on Promotion and Tenure, 2013-2015

C. Departmental

Building Committee, 1975-76, 1979-80
Admissions Committee, 1976-77
Graduate Program Committee, 1977-79, (Chair) 1985-89, 1991-92
Ad-hoc Departmental Booklet Committee, 1976
Departmental Faculty Search Committee, 1979, 1982
Ad-hoc Committee to Reduce Teaching Loads, 1979
Naff Symposium Committee, 1978-81, (Chair) 1979-80, 1990-91, 2001-2002, 2022-2023
Communications Committee, 1979-82, 1990-91
General Chemistry Committee, (Chair) 1983-84
Promotion and Tenure Committee, 1983-85, (Chair) 1984, 1999-00, 2000-01, 2001-02, 2002-03, 2005-06, 2006-07; 2010-2011.
Faculty Search Committee, (Chair) 1987-88, 1990-91, 1991-92
Executive Committee, 1987-89, 1990-91, 1991-92, 1993-94, 1994-95, 1995-96, 1996-97, 1997-98, 1998-99, 1999-00, 2000-01, 2001-02, 2002-03, 2003-04, 2004-05, 2005-06
Academic Matters Committee, (Chair) 1989-90
Nantz Fellowship Committee, 1990
Library Committee, 1991-92, 1993-94
Biological Chemistry Division Chairperson, 1984-2014

Biological Chemistry Curriculum Committee, (Chair) 1993-94
Organic Faculty Search Committee, 1995-96
Chemistry Faculty Retirement Committee, (Chair) 1997
Information Committee, 2006-07; 2009-2010 (Chair); 2010-2013
Academic Integrity Committee, 2015-present.
Awards Committee, 2015-present
Naff Symposium Committee Chair, 2022-2023.
ACE Committee 2024

Courses Taught

CHE 102R - General Chemistry, Fall, 1979; 3 credits
CHE 104 - Elements of General Chemistry, Fall, 1987, 1988, 1989, 1994, 1995, 1996; 3 credits
CHE 105 - General Chemistry, Fall, 1979, 1990, 1991, 1992, 1993; Summer, 1984; 3 credits
CHE 110 - General Chemistry, Fall, 1975, 1976, 1978; 3 credits
CHE 115 - General Chemistry Lab, Fall, 1983, 1984; Spring, 1984, 1985; 3 credits
CHE 440G - Physical Chemistry, Fall, 1981, 1982, 1997; Summer, 1991; 3 credits
CHE 441G - Physical Chemistry Lab, Spring, 1977, 1978, 1979, 1980; 2 credits
CHE 443 - Physical Chemistry Lab, Spring, 1976; 3 credits
CHE 444G - Physical Chemistry Lecture, Fall, 1978, 1979; 3 credits
CHE 548 - Advanced Physical Chemistry II, Fall, 1976, 1977; Spring, 1983, 1999, 2000, 2001, 2002, 2003, 2004, 2005, 2006; 2007; 3 credits
CHE 552—Advanced Biological Chemistry II, Spring 2011;2013; 2015; 2017; 2019; 2021; 2023; 2024 3 credits
CHE 556 – Elements of Neurochemistry, Spring 2014; 2016; 2018; 2020; 2022; 3 Credits
CHE 572 - Undergraduate Seminar, Fall, 1984, 1993, 1994; 1 credit
CHE 580G - Biophysical Chemistry, Spring, 1977; 2 credits
CHE 580- Elements of Neurochemistry, Spring 2007; 2009; 2012, 3 credits
CHE 746 - Biological Applications of Spectrocopy, Summer, 1985; 3 credits
CHE 746G - Theory and Applications of ESR, Fall, 1977; Summer, 1981, 1984; 2 credits
CHE 776C - Organic/Biological Seminar, Fall, 1985; 1 credit
CHE 776D - Physical Chemistry Seminar, Spring, 1985, 1986, 1989, 1993, 1996, 1998, 2000, 2002, 2004; Fall, 1986, 1991; 1 credit
CHE 779 - Membrane Sciences Colloquium, Fall, 1986, 1988, 1991, 1993, 1994, 1995, 1997, 1999; Spring, 1992, 1993, 1994, 1995, 1996, 1998, 1999, 2000;1 credit

M.S. Theses Directed

Patrick K. Leung, "Biophysical and Biochemical Studies of Erythrocyte Membranes in Various Neurological Disorders," 1980.

Peter F. Doorley, "ESR Studies of the Membrane Defect in Huntington's Disease Erythrocyte Membranes," 1980.

Joseph A. Cook, "Biophysical and Biochemical Investigations on the Effect of Sialic Acid on the Physical State of Membrane Proteins in the Human Erythrocyte," 1982.

Bennett T. Farmer, "Erythrocyte Membrane Response to Selective Perturbations Monitored by a Sialic Acid-Bound Spin Label," 1982.

Joseph W. Wyse, "ESR Studies of the Effects of Al(III), Cd(II), and Hg(II) on Proteins, Lipids, and Carbohydrates of Human Erythrocyte Membranes," 1985.

Fenton D. Williams, Plan B (Course-Work), 1986.

Todd Elder, Plan B (Course-Work), 1986

N. Myron Gunsalas, "Investigations of Choline Influx Into Erythrocyte Membranes With Applications to Alzheimer's Disease," 1986.

Donna A. Palmieri, "Biophysical and Biochemical Studies of Erythrocyte Membranes: I. ESR Investigations of Membrane Alterations in Zinc-Deficient Mammals; II. Development and Characterization of an Enzymatic System for the Potential Decontamination of Serine-Active Neurotoxins," 1986.

Sandra A. Umhauer, "ESR Studies of Pharmaceuticals: I. Photolytic Decomposition of Mitotane and Related Compounds Using the Technique of Spin Trapping," 1988.

Andrew M. Schneider, "Membrane Interactions of cis-5-Norbornene-2,3-endo-Dicarboxylic Acid and Tri-n-Butyltin: Electron Paramagnetic Resonance Studies of Spin-Labeled Human Erythrocyte Membranes and Examination of Relative Neurotoxic Potential," 1990.

Maren M. Nicholas Burchfield, "Erythrocyte Membrane Transport of Choline in Relation to Alzheimer's Disease and of Chloride in Relation to Huntington's Chorea," 1991.

Anuradha Rangachari, "Electron Paramagnetic Resonance Studies of Membrane Interactions of Therapeutic Agents Useful in Alzheimer's Disease," 1991.

Jinbo Lee, "Electron Paramagnetic Resonance Studies of Membranes: 1. Effects of a Teratogen, Methoxyacetic Acid; 2. Radical Scavenging by Carnosine; 3. Papain-Based Biofunctional Membranes," 1993.

Bin Sun, "Electron Paramagnetic Resonance Investigations of the Effects of Some Analgesics and Endotoxin on the Physical State of the Erythrocyte Membrane," 1993.

Jennifer Bianchi, Plan B (Course Work), 1995.

Beverly Howard, "Brain Synaptosomal Membrane Oxidative Damage Associated with Aging and Alzheimer's Disease," 1996.

Pamela S. Cole, "Electron Paramagnetic Resonance and Circular Dichroism Studies of Cortical Synaptosomal Membranes and Micelle-Resident Amyloid Peptides: Relevance to Transient Ischemia Attacks and Alzheimer's Disease," 1996.

Marsha Cole, "The Effects of Antioxidants on Membrane Proteins in Oxidative Stress Systems," 1998.

Chava Bader Pocernich, "Free Radical Oxidative Stress in Rat Brain: Insights Into the Cholinergic Defict Hypothesis of Alzheimer's Disease and Protection by *In-Vivo* Elevation of Glutathione," 1999.

Joshua T. Colvin, "Electron Paramagnetic Resonance Spin Label Titration Studies of the Effects of Random and Site-Specific Immobilization of the Enzymes Organophosphorus Hydrolase and Subtilisin onto Polymeric Membranes with Different Properties," 2001.

Quanzhen Huang, "N-Acetyl Cysteine-Mediated Protection in APP/PS-1 Human Double Mutant Knock-in Mouse Model of Alzheimer's Disease," 2007.

Jessica L. Harris, "Investigations into Modulation of Brain Oxidative Stress by Various Antioxidants," 2012.

Zhaoshu Zhang, "Increase of Basal Oxidative Stress Levels and Impairment of Heme Oxygenase-1/Biliverdin Reductase Post-Translational Modification by the Defect of Parkinson-Related Gene of *PINK1*," 2014.

Martha Mortell, "Mammalian Target of Rapamycin Cell Signaling Pathway in Phosphatase and Tensin Homolog Induced Kinase 1 Knockout Rat Model of Parkinson's Disease," 2022.

Ph.D. Dissertations Directed

Jaweed Ashraf, "Chemical Studies of Erythrocyte and Model Membranes," 1980.

Jimmy B. Feix, "Spin Labeling Investigations of Erythrocyte Membrane Structure With Applications to Some Inherited Neurological Disorders," 1981.

W.A. Bialas, "Physiological Malfunction of Erythrocytes in Huntington's Disease," 1982, From the Technical University of Wroclaw.

Bennett T. Farmer, II, "Spin Label Investigation of Human Erythrocyte Membranes: (1) Organization of and Interactions Between the Skeletal Network, the Bilayer Domain, and Cell-Surface Carbohydrates; (2) Model for the Neuronal Membrane," 1984.

Joseph W. Wyse, "Modulation of Skeletal Protein-Protein Interactions in Human Erythrocyte Membranes: ESR Spin-Labeling Investigations," 1988.

Donna A. Palmieri, "Interaction of Drugs and Domain-Specific Modulators With Erythrocyte Membranes and Their Associated Enzymes," 1989.

Mary Anne Yacko, "Electron Paramagnetic Resonance Studies of the Structure and Function of the Ca^{2+}-Regulatory Protein, Calmodulin, in Solution and Bound to the Erythrocyte Membrane," 1990.

Li Nan Chao, "Water Transport Across Human Erythrocyte Membranes Studied by the ^{1}H-T_2 NMR Method," 1990.

Ping Zhuang, "Electron Paramagnetic Resonance, Fluorescence and Enzymatic Characterization of the Structure and Function of a Thiol Protease in Solution and Bound to Synthetic Membranes," 1991.

Sandra A. Umhauer, "Development and Partial Characterization of a Preparation of Rat-Brain Synaptosomes Spin Labeled With a Protein-Specific Paramagnetic Probe: Effect on Protein Segmental Motion of Two Drugs Used in the Treatment of Alzheimer's Disease," 1992.

Santosh George Kottayil, "Implications of Sulfation on the Pharmacological Activity of Morphine: A Structure-Activity Study," 1993.

Nathan C. Hall, "Ischemia/Reperfusion Induced Alterations in the Physical State of Synaptosomal Membrane-Associated Proteins and Lipids: Relevance to Stroke," 1995.

Kenneth L. Hensley, "Magnetic Resonance Studies of Free Radical-Mediated Oxidative Stress in Brain: Relevance to Aging and Alzheimer's Disease and Other Neurological Disorders," 1995.

Sowmya Ganapathi, "Immobilized Enzymes: An Investigation of the Kinetics and Conformational Changes of a Protease on Functionalized Membranes," 1996 (Chemical Engineering).

Ramachandran Subramaniam, "Electron Paramagnetic Resonance and Biochemical Studies of Biological and Biofunctional Membranes. Part 1: Structure-Function Relationship of Serine Protease Subtilisin: Strategies for Immobilization; Part 2: Toxicological Properties of Amyloid Peptides and Lipid Peroxidation Products: Relevance to Alzheimer's Disease," 1997

S. Michael DeAtley, "Adriamycin Induced Cardiotoxicity: Evidence for Oxidative Stress and Protection by Antioxidants," 1998.

Tanuja A. Koppal, "Amyloid β-Peptide- and Peroxynitrite-Induced Oxidative Stress in Rodent Cortical Synaptosomal Membranes: Insights Into Neurotoxicity in Alzheimer's Disease Brain," 1998.

Servet M. Yatin, "*In vitro* and *In vivo* Free Radical Oxidative Stress Associated with Alzheimer's Disease Amyloid β-Peptide," 1999.

Michael A. La Fontaine, "*In-vivo* Oxidative Stress in 3-Nitropropionic Acid-Induced Brain Neurotoxicity: Implications for Huntington's Disease," 2000.

Christopher M. Lauderback, "Modulation of Neuronal Protein and Lipid Oxidation in Animal Models Relevant to Alzheimer's Disease and 4-Hydroxy-2-Nonenal Modification of a Glutamate Transporter in the Alzheimer's Brain," 2001.

Jaroslaw Kanski, "Importance of Methionine 35 in Free Radical-Associated Mechanisms of Alzheimer's Amyloid β-Peptide Neurotoxicity, and Experimental Rationale for the Use of Antioxidants as Therapeutic Intervention in Alzheimer's Disease," 2001.

Alessandra Castegna, "Oxidatively-Modified Proteins: I. Proteomic Identification of Specifically Oxidized Proteins in Alzheimer's Disease Brain. II. Modulation of Synaptosomal Membrane Lipid Bilayer Asymmetry by 4-Hydroxy-2-trans-nonenal," 2003.

Jennifer Drake, "Oxidative Stress in Models of Alzheimer's Disease: I. Roles of Peroxynitrite, Amyloid Beta-Peptide, and 4-Hydroxynonenal. II. Modulation by Gamma-Glutamylcysteine Ethyl Ester," 2003.

Debra Boyd-Kimball, "Amyloid β-Peptide (1-42)-Mediated Oxidative Stress and Neurotoxicity: I. The Role of Methionine 35. II. Proteomic Identification of Specifically Oxidized Proteins in Models of Alzheimer's Disease," 2004.

Chava B. Pocernich, "Tat-Associated Oxidative Stress in HIV Dementia and Models Thereof: Roles of Astrocytes, Apolipoprotein E, and Antioxidants," 2004.

H. Fai Poon, "Redox Proteomics Identification of Oxidatively Modified Proteins and Their Pharmacological Modulation: Insights into Oxidative Stress in Brain Aging and Age-Related Cognitive Impairment," 2005.

Vasile Smuleac, "Polyelectrolyte Functionalized Membranes for Tunable Separations, Metal Capture and Enzymatic Catalysis," 2006.

Gururaj Joshi, "Multifunctional Potential Therapeutics for Oxidative Stress-Related Disorders and Models Thereof," 2006.

Wycliffe O. Opii, "Oxidative Stress and Redox Proteomics Studies in Model of Neurodegenerative Disorders: I. The Canine Model of Human Aging; II. Insights into Successful Aging; and III. Traumatic Brain Injury," 2006.

Tanea T. Reed, "Oxidative Stress in Brain in Mild Cognitive Impairment and Early Alzheimer's Disease: Implications for the Progression of Alzheimer's Disease," 2007.

Shelley F. Newman, "Investigations of S-Glutathionylation of Brain Proteins in the Progression of Alzheimer's Disease and of a Potential Glutathione Mimetic as a Treatment for Alzheimer's Disease," 2008.

Giovanna Cenini, "Biomarkers for Alzheimer's Disease: From Central Nervous System to Blood," 2009, From the University of Brescia.

Miranda L. Bader Lange, "In Vivo Oxidative Stress in Alzheimer Disease Brain and a Mouse Model Thereof: Effects of Lipid Asymmetry and the Single Methionine Residue of Amyloid β-Peptide." 2010.

Christopher D. Aluise, "Role of Oxidative Stress and Differential Protein Expression: I. Preclinical Alzheimer's Disease Brain. II. Plasma and Brain From In Vivo Treatment with Doxorubicin: Amerlioration of Oxidative Stress as a Preventative Strategy to Prevent Chemotherapy-Induced Chemobrain," 2010.

Joshua B. Owen, "Characterization of Oxidative Modifications to LDL-Related Receptor Protein 1 (LRP1) and Lectin-Affinity Chromatography Coupled Proteomics Studies in Mild Cognitive Impairment and Alzheimer's Disease Brain: Implications for Disease Pathogenesis and Progression," 2010.

Sarita S. Hardas, "Investigations of Oxidative Stress Effects and Their Mechanism in Rat Brain After Systemic Administration of Ceria Engineered Nanomaterials," 2012.

Jeriel T.R. Keeney, "Doxorubicin-Induced, TNF-a Mediated Brain Oxidative Stress, Neurochemical Alterations, and Cognitive Decline: Insights into Mechanisms of Chemotherapy Induced Cognitive Impairment and Its Prevention," 2013.

Judy C. Triplett, "Proteomics and Phosphoproteomics of Brain: (1) Analyses of the PINK1 Knockout Model of Parkinson Disease; (2) Insights into the Progression of Alzheimer Disease; and (3) The Naked Mole-Rat Model of Salubrious Aging," 2015.

Aaron M. Swomley, "Oxidative Stress and Proteomic Studies of Mammalian Models of Age-Related Metabolic Dysfunction in Neurodegenerative Disorders: (1) Upregulation of Pin1 in Alzheimer Mouse Model; (2) Analysis of Brain Post-Intranasal Administration of Insulin in Alzheimer and Induced Diabetic Mouse Models; (3) Analysis of Proteome Changes in the Parietal Lobule of Rhesus Monkey Non-Human Primate Following Resveratrol Supplementation as Part of a Western-Diet," 2017.

Xiaojia Ren, "Studies of Oxidative Damage, Brain Proteome, and Neurochemical Metabolites in Cognitive and Neurodegenerative Disorders: (1) Chemotherapy-Induced Cognitive Impairment; (2) Parkinson Disease Rat Model," 2019.

Nicole G. Rummel, "Oxidative Damage to Brain Cells Underlies: (I) Resistance to Radiation and Increased Tumor Cell Growth in Glioblastoma; (II) APOE Allele Status and Pentose Phosphate Pathway Proteins in Alzheimer Disease Mouse Models," 2022.

Ph.D. and M.S. Committees of Other Students on Which I Served

Steven DeAtley, Ph.D., Pharmacology
Calvin Gregory, Ph.D., Chemistry
Emily Hernández, Ph.D., Chemistry
Cathleen Hsu, Ph.D., Chemistry
Wei Huang, Ph.D., Chemistry
Abhay Ladhe, Ph.D., Chemical Engineering
Laura Land, Ph.D., Pharmaceutical Sciences
Jennifer Lewis, Ph.D., Chemistry
Yu-Chin Lien, Ph.D., Chemistry
Payman Nasr, Ph.D., Anatomy and Neurobiology
C. A. Post, Ph.D., Toxicology
Sridhar Ramanathan, Ph.D., Chemistry
Lyndon Salins, Ph.D., Chemistry
Khaula Sawah, Ph.D., Pharmaceutical Sciences
Jianquan Wang, Ph.D., Chemistry
Hongna Wang, Ph.D., Pharmaceutical Sciences
Zhiren Xia, M.S., Chemistry
Morazhan Sarkari, Ph.D., Chemical Engineering
Jennifer Wininger, M.S., Chemistry
Vesna Vukashinovich, Ph.D., Chemistry
Zhihao Zheng, Ph.D., Chemistry
Yue Liu, Ph.D., Chemistry
Jennifer Feiler, M.S., Chemistry

S. Prasad Gabbita, Ph.D., Toxicology
Christopher Lockwood, Ph.D., Pharmacy
Jiang-Ling Liu, Ph.D., Chemical Engineering
Shawn Plummer, M.S., Chemistry
Rajesh Schinde, Ph.D., Chemical Engineering
Marsha Cole, Ph.D., Nutritional Sciences
Yan Zhu, Ph.D., Chemistry
Ansul Gupte, Pharmacy
Harpreet Dhooper, Chemistry
Dong-Yang Choi, Ph.D., Anatomy and Neurobioilogy
Susan D'Souza, Ph.D., Pharmacy
Saurav Datta, Ph.D., Chemical and Materials Engineering
Radhika Vaishnav, Ph.D., Physiology
Jitbanjong Tangpong, Ph.D., Prince of Songkla University, Songkhla, Thailand
Thilini Abeywansha, Ph.D, Chemistry
Xinyi Zhang, Ph.D., Chemistry
Emily Oostveen, M.S., Integrated Plant an Soil
Chen Chen, Ph.D., Chemistry
Sierra Hernandez, Ph.D., Chemical Engineering
Wei Zhang, Ph.D., Toxicology
Alexandra Amaro Ortiz, Ph.D., Toxicology
Erin Wachter, Ph.D., Chemistry
Qian Chai, Ph.D., Chemistry
Mustapha Bojang, M.S., Chemistry
Tracy Gastineau, Ph.D., Chemistry
Isoiza Ojo, Ph.D., Chemistry
Alex Fenton, Chemistry
Mengfan Xia, Ph.D., Physiology
Emily Ho, Toxicology and Cancer Biology

Postdoctoral Fellows and Visiting Scientists Supervised

- Sridhar Varadarajan, Ph.D., Penn State University
- Chafia Trad, Professor of Physics, American University of Beirut
- Arzu Ersoz, Ph.D., Hajatepe University, Ankara, Turkey
- Rukhsana Sultana, Ph.D., Hyderabad University, India
- Hafiz Mohammad-Abdul, Ph.D., Hyderabad University, India
- Marzia Perluigi, Ph.D., University of Rome, La Sapienza
- Mubeen Ansari, Ph.D., Hamdard University, New Delhi, India
- Carlos Fernando de Mello, Ph.D., Federal University of Santa Maria, Brazil
- &Giovanna Cenini, University of Brescia, Italy
- &Marta Piroddi, Ph.D., University of Perugia, Italy
- &Fabio Di Domenico, Ph.D., University of Rome, La Sapienza
- Rena Sowell, Ph.D., Indiana University
- &Gabriella Casalena, Ph.D., University of Bologna, Italy
- &Eugenio Barone, Catholic University of Rome, Italy

- [&]Sarah Förster, University of Bonn, Germany
- Antonella Tramutola, University of Rome, La Sapienza

[&]Ph.D. earned in large part based on research conducted in my laboratory.

Placement of Graduate Students (under my supervision)

Patrick K. Leung, M.S., 1980: (1984), M.D. University of Kentucky, Medical School, Lexington, KY. In private practice in Lexington.

Peter F. Doorley, M.S., 1980: Retired as Chief Analytical Chemist, Humko Chemical Company, Memphis, TN.

Jaweed Ashraf, Ph.D., 1980: Senior Research Scientist, Pfizer Pharmaceuticals. Now: Deceased.

Jim B. Feix, Ph.D., 1981: Full Professor, Departments of Radiation/Biology and Neurology, Medical College of Wisconsin, Milwaukee, WI.

Joseph A. Cook, M.S., 1982: (1986), M.D. Armed Forces Medical School, Bethesda, MD. Physician in private practice in Little Rock, AR.

Bennett T. Farmer, M.S., 1982; Ph.D., 1984: Senior Scientist, Bristol-Meyers Squibb, New Jersey

W. A. Bia≈as, Ph.D., 1982 (officially awarded by Technical University of Wroclaw, Poland): Professor of Biophysics, Technical University of Wroc≈aw, Poland.

Joseph W. Wyse, M.S., 1985; Ph.D., 1988: Analyst, Price Waterhouse Coopers, Philadelphia, PA. Now: Head of his own consulting firm.

Fenton D. Williams, M.S., 1986: University of Louisville Medical School.

Todd Elder, M.S., 1986: Ph.D., College of Pharmacy, University of Kentucky, 1989. Pharmaceutical Industry.

N. Myron Gunsalus, M.S., 1986: Chemical Industry, Orlando, FL.

Donna A. Palmieri, M.S., 1986; Ph.D., 1989: Senior Scientist and Project Director, Boehringer Mannheim, Indianapolis, IN. Now: Vice President for Global Regulatory Affairs, Roche Diagnostic Systems., Indianapolis, IN.

Andrew M. Schneider, M.S., 1990: M.D. Program, Duke University Medical School; Radiology Practice, Lakeland, FL.

Mary Anne Yacko, Ph.D., 1990: Senior Scientist, Boehringer Mannheim, Indianapolis, IN. Now: Roche Diagnostic Systems.

Li Nan Chao, Ph.D., 1990: Postdoctoral Fellow, Department of Chemistry, University of New Orleans.

Ping Zhuang, Ph.D., 1991: Scientist, Dyne-Tel Corporation, Ashville, NC.

Anuradha Rangachari, M.S., 1991: Research and Development Chemist, Boehringer Mannheim, San Francisco, CA. Now Roche Diagnostic Systems.

Maren M. N. Birchfield, M.S., 1991: Scientist, Environmental Services Corporation, Marietta, Ohio.

Sandra A. Umhauer, Ph.D., 1992; M.D., 1995, University of Kentucky. Physician, Dayton, OH.

Santosh George Kottayil, Ph.D., 1993: Co-Founder and Executive Vice President, Insys Pharmaceuticals.

Bin Sun, M.S., 1993: Research Scientist, Amgen Biotechnology Corporation, California.

Jinbo Lee, M.S., 1993: Ph.D. Program in Chemistry, Princeton University; now Senior Scientist at Xerox Corporation.

Jennifer Bianchi, M.S., 1995: Environmental Chemist, Central Kentucky.

Nathan Hall, Ph.D., 1995: M.D. Program, University of Cincinnati Medical Center. Now: Diagnostic Radiologist, Columbus, OH

Kenneth L. Hensley, Ph.D., 1995: Research Associate, now Faculty, Oklahoma Medical Research Foundation, Oklahoma City, OK. Now: Associate Professor of Pathology, Univesity of Toledo School of Medine.

Beverly J. Howard, M.S., 1996: Quality Assurance Supervisor, Armour Food Corp., Springfield, KY.

Pamela S. Cole, M.S., 1996: Researcher, University of Colorado.

Sowmya Ganapathi, Ph.D., 1996 (Chemical Engineering): Scientific Researcher, U. S. EPA, Cincinnati, OH.

Ramachandran Subramaniam, Ph.D., 1997: Postdoctoral Fellow, Institute of Pathology, Case Western Reserve University, Cleveland, OH. Then, Assistant Professor of Chemistry, Santa Clara University.

S. Michael DeAtley, Ph.D., 1998: Postdoctoral Fellow, Department of Surgery, University of Kentucky Medical Center, Lexington, KY; now Professor of Pharmacology and , Osteopathic Medical School, Pikeville College, Pikeville, KY.

Marsha Cole, M.S., 1998: Ph.D. Program, Nutritional Sciences, University of Kentucky, Lexington, KY. Then, Postdoctoral Scholar, University of Pittsburgh; Now: Assistant Professor of Biochemistry, University of Louisville School of Medicine.

Tanuja Koppal, Ph.D., 1998; Postdoctoral Fellow, Department of Molecular Biology, Northwestern University Medical School, Chicago, IL. Now: Owner, Scientific Conference Company, Northern New Jersey.

Servet M. Yatin, Ph.D., 1999; Postdoctoral Fellow, Department of Neurochemistry, Harvard University Medical School, Southborough, MA. Now: Professor of Chemistry, Quincy College, Quincy, MA

Michael A. La Fontaine, Ph.D., 2000; Assistant Professor of Chemistry, Central Connecticut State University, New Britain, CT. Now: Associate Professor of Pharmacy, Ferris State University

Joshua Colvin, M.S., 2001; Staff Scientist, Pfizer Pharmaceuticals, Groton, CT.

Christopher M. Lauderback, Ph.D., 2001; Vice President for Manufacturing, KenPharm, Celebration, FL

Jaroslaw Kanski, Ph.D., 2001; Senior Scientist, New River Pharmaceuticals, Blacksburg, VA.

Jennifer Drake, Ph.D., 2003; Senior Scientist, Shering-Plough, Inc., Kenilworth, New Jersey. Now: Senior Development Scientist, Merck Pharmaceuticals.

Alessandra Castegna, Ph.D., 2003; Associate Professor, Department of Biotechnology, University of Bari, Italy.

Debra Boyd-Kimball, Ph.D., 2004; Associate Professor of Chemistry, Mount Union University, Alliance, OH.

Chava B. Pocernich, Ph.D., 2004; Assistant Professor of Chemistry, Eastern Kentucky University, Richmond, KY. Now: Part-Time Instructor, Des Moines, IA. [She resigned her position at EKU in order to join her husband, who had been promoted to a federal environmental inspector position from a Kentucky inspector position].

Hung Fai Poon, Ph.D., 2005; Senior Research and Development Scientist, Sigma-Aldrich Chemical Company, St. Louis, MO; Now: Chief of Laboratories of Biocompare, Ltd, China

Vasile Smuleac, Ph.D., 2006; Postdoctoral Fellow, Department of Chemical and Materials Engineering, University of Kentucky, Lexington, KY

Gururaj Joshi, Ph.D., 2006; Postdoctoral Fellow, then Research Associate, College of Pharmacy, University of Wisconson, Madison, WI

Wycliffe O. Opii, Ph.D., 2006; Postdoctoral Fellow, Institute on Aging, University of California at Irvine; 2009-2013, MD, University of Kentucky School of Medicine; Now: Internal Medicine Physician, Central Baptist Hospital, Lexington, KY

Tanea Reed, Ph.D., 2007; Professor of Chemistry, Eastern Kentucky University, Richmond, KY

Quanzhen Huang, M.S., 2007; Senior Analyst, Center for Applied Energy Research, University of Kentucky

Shelley F. Newman, Ph.D., 2008; Professor, Department of Chemistry, Bluegrass Community and Technical College, Lexington, KY

Miranda L. Bader Lange, Ph.D., 2010; 2010-2013, Postdoctoral Scholar, Mayo Clinic, Rochester, MN. Now: Editor, WebMed Central; Lecturer, University of Wisconsin, Platteville.

Christopher D. Aluise, Ph.D., 2010; Postdoctoral Scholar, Vanderbilt University School of Medicine, Nashville, TN. Now: Chief of Toxicology, Eli Lilly Pharmaceuticals.

Joshua B. Owen, Ph.D., 2010; Postdoctoral Scholar; University of Washington School of Medicine. Now: Lecturer, Chemistry, University of Kentucky.

Jessica Harris, M.S., 2012, Senior Scientist, Cook Pharmaceuticals, Bloomington, IN

Sarita S. Hardas, Ph.D., 2012, Senior Development Scientist, Beckman Coulter Corp., Minneapolis, MN

Jeriel Keeney, Ph.D., 2013; Lecturer, Michigan State University College of Medicine, Grand Rapids

Zhaoshu Zhang, M.S., 2014, Ph.D. Program in Statistics, University of Deleware

Judy C. Triplett, Ph.D., 2015; Postdoctoral Scholar, Neuroscience, University of Florida. Now: Lead Scientist, Performance Product Line, Wright-Patterson Air Force Base, Dayton, OH.

Aaron M. Swomley, Ph.D., 2017; PharmD Program, Univesity of Cincinnati College of Pharmacy, Cincinnati, OH.

Xiaojia Ren, Ph.D., 2019; Postdoctoral Scholar, Cell and Molecular Biology, University of Nebraska College of Medicine, Omaha, NE

Nicole G. Rummel, Ph.D., 2022. Senior Research Scientist, NapiGen, Inc., Philadelphia, PA.

Martha Mortell, M.S., 2022. Research Assistant, Dept. of Pharmacology and Nutritional Sciences, UK. Now, M.D. Program, UK Medical School.

Placement of Undergraduate Students (under my supervision)

John R. Brown, B.S.: Chemical Industry
* James Q. Oeswein, B.S.: Ph.D., Biochemistry, University of Florida; Chief Scientist, Genentech Corp.
* Wesley E. Watson, B.S.: U. S. Army Chemical Division
* Marshall E. Prunty, B.S.: M.D.: Private Practice, Greenburg, KY
Christopher Zaborowski, B.A.: University of Louisville (?)
* Kim Hisle, B.A.: Horse Breeder, Lexington, KY
* Michael Braden, B.S.: Ph.D., Chemistry, Wayne State University, 1985
* Mark Purdy, B.S.: Ph.D., Chemical Engineering, N. C. State University, 1983
* Michael Fitzpatrick, B.A.: M.D., University of Kentucky Medical School, 1983
Jeff Grow, B.A.: M.D., University of Kentucky Medical School
Tamela Tinsley, B.A.: Chemical Industry
Curt Milliman, B.S.: Research Chemist, Monsanto Chemical Co.
Hoi Nguyen, B.S.: Ph.D., Pharmacy, University of Kentucky, 1984

Frank Wright, B.A.: D.M.D., University of Kentucky
Stuart Eldridge, B.A.: M.S., University of Louisville, 1983
Michael Hawks, B.A.: D.M.D., University of Kentucky
* Michael Kommor, B.A.: M.D., University of Louisville
* Fernando Ordaz, B.S.: M.D., University of Louisville
Tufan Senler, B.A.: M.S., University of Louisville, 1983
* Ahmet Akaydin, B.A.: M.D., University of Kentucky
‡,* Larry L. Green, B.S.: Ph.D., Molecular Biology, University of Wisconsin
Susan Luerman, B.A.: Chemical Industry
Mary Montebello, B.A.: University of Kentucky School of Law, J.D., 1985
Anita Lukjan, B.S.: Department of Chemistry, University of Kentucky
Shelly Stafford, B.A.: M.S., Murray State University
Lynna Garten, B.S.: Chemical Industry
*,** Troy Harmon, B.S.: M.S., Chemistry, Cornell University
Marc McEllistrem, B.S.: Ph.D., Chemistry, University of Wisconsin
Brent Murphy, B.A.: M.D., University of Kentucky
John Sharpe, B.A.: M.D., University of Kentucky
Dwayne Jarell, B.S.: Research Chemist at Malinckrodt
Rhonda Metzger, B.A.: M.D., University of Louisville
Erik Sandefer, B.A.: Ph.D., Pharmacy, University of Kentucky
Nancy Lester, B.A.: M.S.W., Psychiatric Counselor, University of Kentucky
Steve Overstreet, B.A.: M.D., University of Louisville
* Cindy Tackett, B.A.: G.T.E. Electronics
**,§ Steve Edelstein, B.A.: M.D., University of Cincinnati
*,** Vicki Abbott, B.S.: Ph.D., Chemistry, Ohio State University, 1990
Don Moore, B.A.: M.D., University of Kentucky
Brent Hallahan, B.A.: Ph.D. Program, Psychology, Indiana University
Greg Roberts, B.A., Department of Chemistry, University of Kentucky
* Lydia Schaffer, Chester Davis Undergraduate Summer Research Fellow, (B.S., 1989, West Virginia Weselyan University)
Hannah Chow, B.A.: M.D.-Ph.D. Program, University of Illinois
*,†,§ Kenneth Hensley, B.S.: Ph.D., Department of Chemistry, University of Kentucky
*,‡,†† Wendy Shaw, B.A.: Research Technician, University of Kentucky
†† Faeimm Tang, B.A., 1995: Marketing Executive, Henkel Oleochemicals, Malaysia
* William James, B.A.: Ophthalmology Aid, Houston, TX
*,‡,†† Beverly Howard, B.S.: M.S., Department of Chemistry, University of Kentucky
* Laura Martin, B.S.: Ph.D. Program, Department of Chemistry, University of North Carolina
*,†† Shabnam Azhar, B.A.: Graduate Program in Molecular Biology, Vanderbilt University
* Kerry Allen, B.A.: Ph.D. Program, Department of Chemistry, Ohio State University; Georgetown University
Kate Bowling, B.A.: Chemical Industry, Kentucky
Marci Cole, B.S.: M.S. Program, Department of Chemistry, University of Kentucky
* Fouad S. Allouch, B.A., 1996: Chemist, Procter & Gamble, Oxford, OH
* Michael Green, B.S.: M.D. Program, University of Kentucky
Jeremy Warner, B.S.: M.D. Program, Marshall University
* Brad Jordan, B.S.: U. S. Navy Submarine Science Officer
* Jennifer Drake, B.A., 1999: Ph.D. Program, Department of Chemistry, University of Kentucky
* Timothy Aluich, B.S., 1999: Owner, Chemical Firm, Lexington, KY
***Adam Brier, B.A., 1999: Department of Biophysics, University of California, Berkeley

Michelle Dudley, B.S., 2000: Department of Chemistry, University of California, Berkeley

* Feerozah Jahanshaki, B.A., 2000: M.D. Program, University of Kentucky

* Allison Cardin, B.A., 2000: M.D. Program, University of Kentucky

* Cynthia Racine, B.A., 2000: M.D. Program, University of Kentucky

* Janna Hackett, B.S., 2001: M.D. Program, University of Kentucky Medical School

* Maria Tsoras, B.S., 2001: Pharm.D. Program, College of Pharmacy, University of Kentucky

* Antonia Stoyanova, B.S., 2002: Department of Chemistry, University of Kentucky

†††, * Robin Petroze, B.A., 2003: M.D. Program, University of Cincinnati

* Nathan Schreve, B.S., 2006: Withdrew From program

* Holly Shepherd, B.A., 2005: Dental School, State University of New York at Stoney Brook

* Nicole Scheff, B.S., 2009, Obtained Ph.D. in Neuroscience, University of Pittsburgh, and is on faculty there.

* Georgianne Tiu, B.S., 2009, Masters of Public Health Program, Univ of Cincinnati

* Austin Baker, B.S. 2010. Graduate Program in Chemistry, Emory University

Michael Goodman, B.S. 2011, PhD, Chemistry, Vanderbilt University in 2018; Postdoc at University of California at Davis.

Sudipa Chowdhry, B.S. 2011, NIH Research Internship in Bethesda, MD

* Govind Warrier, B.S. 2011, Masters of Public Health Program, Univ. of Kentucky and M.D. from the University of Louisville School of Medicine. Resident, University of Michigan.

Neeka Udechukwu, B.S. 2012, M.D., Univ. of Kentucky School of Medicine

* Andrew Welleford, B.S. 2013, Graduated from the MD/PhD Program, Univ of Kentucky School of Medicine

* Jessime Kirk, B.S. 2014, PhD Program in Biosciences, University of North Carolina, Chapel Hill

* Niranjana Warrier, B.S. 2014, Now: M.S. Program, Psychology Counseling, Northern Kentucky University

Kim Tran, B.S., 2014, Chemical industry, Wisconsin

Suhas Bhardwaj, B.S., 2015, Applying for Medical School

Grant Austin, B.S, 2016, Biology MS Program, University of Kentucky; Now enrolled in MD Program, University of Kentucky Medical School.

Payton Sciarratta, B.S., 2016, MPH Program, George Washington University

Samantha Bosshammer, PharmD program, Univesity of Florida

Sarah Goebel, B.S., 2017, PhD program in Neuroscience, Albert Einstein School of Medicine. (one of 11 accepted graduate students out of approximately 300 applicants).

Angela Hinchie, Graduated May 2018. Accepted in PhD programs in Biochemistry at Duke University, University of Pittsburgh, University of Texas Southwestern, and Case Western University. She chose to join University of Pittsburgh.

Eric Vogt, Graduated May 2018. Attends UK Medical School.

Brad Seahorn, Graduated May 2018, Working at Maker's Mark Distillery in Kentucky.

Nicole Martin, Graduated May 2018. Attends UK Medical School.

Allison Lane, Graduated, May 2019 , Univesity of Kentucky, Chemistry. Working at Johns Hopkins University

Turner Lee, withdrew from UK, Spring 2020.

Lucy Macfarlan, Graduated Chemistry, May 2020. Univ of Glasgow, Scientific Anthropology Program. 2022,
Martha Mortell, Graduated Chemistry, May 2020, MS (Thesis) Dept. of Chemistry with Prof. Butterfield but registered in the Dept. of Medical Sciences, University of Kentucky. In 2022-2023 Worked in Dept. of Pharmacology and Nutritional Sciences, University of Kentucky, and now she is pursuing a MD degree in the UK School of Medicine.
*******Angela Jones, B.S. May 2020. She was accepted in PhD programs in Genetics at Yale, Michigan, Washington Univ.- St. Louis, and Duke. She chose Duke. Recently highlighted in the UK Chemistry Alumni Newsletter.
Madison Webb, B.S., May 2021. Research Technician, Department of Molecular and Cellular Biochemistry, University of Kentucky. Now: NSF Graduate Fellow in the PhD program in Neuroscience, University of California, Berkeley.
Camryn Kennemore, B.S., 2021.
Alex Lukyanchuk, B.S., 2021, University of Kentucky, M.D. Program, College of Medicine.

*Co-authored refereed scientific publication based on his/her independent research.

** First Prize, University-Wide Undergraduate Research Competition, University of Kentucky.

******* Recipient of National Goldwater Scholarship Program

‡ Second Prize, University-Wide Undergraduate Research Competition, University of Kentucky.

† Winner, Waldo Semon National Undergraduate Chemistry Competition.

§ Selected as Maurice A. Clay Award as Outstanding Graduate in the College of Arts and Sciences.

†† Winner, Howard Hughes Memorial Undergraduate Fellowship Based on Research.

††† Winner, National Beckman Foundation Fellowship

NSF Research Experience for Undergraduates Supported in My Laboratory

* Lydia Schaffer, West Virginia Wesleyan
Rebecca Sutton, Georgetown College
Gary Latham, Christian Brothers College
* Pamela Dobbs, Alderson-Broaddus College
* Jennifer Postlewaite, Ohio Wesleyan
Greg Washnock, Northern Kentucky University
* Kenneth Hensley, University of Kentucky
* Kathi Glauner, University of Hawaii, Hilo
Sara Kamboris, University of the South
*† Polly Shrewsbery, Centre College

* Wendy Shaw, University of Kentucky
Kara Gillespie, West Virginia Wesleyan
Kevin Gross, Duke University
* Obadiah Plante, Worcester Polytechnic University
Aracelis Morales Rivera, Catholic University of Puerto Rico
* Jennie Kelly, Gannon University
Christy Rothwell, Georgetown College
* Fred Roediger, Duke University
* Lori Bentenhausen, Duke University
Luis Rodriguez, Catholic University of Puerto Rico
* Jessica Goodlet-Mercer, Kentucky State University
Debra Boyd, West Virginia Wesleyan College
Laura Weeshoff, Duke University
Paul Kiptoo, Berea College
Kristin Mitchell, Russell-Sage College
Shelley Newman, Knox College
Jennifer Collins, Asbury College
Jennifer Abelin, Guilford College

* Co-authored refereed scientific publications based on his/her research during the summer.

† Second-Prize, Graduate and Undergraduate Research Competition, American Institute of Chemical Engineers National Meeting, 1993.

Faculty Mentored by Professor Butterfield

Yinan Wei, PhD, UK Department of Chemistry, through promotion to Associate Professor with Tenure, then to Full Professor of Chemistry with Tenure

Christopher Richards, PhD, UK Department of Chemistry, thus far through Associate Professor of Chemistry with Tenure. Currently, he is being considered for promotion to Full Professor of Chemistry with Tenure.

Samuel Awuah, PhD, UK Department of Chemistry, thus far from his initial appointment Assistant Professor of Chemistry to his 2003 promotion to Associate Professor of Chemistry with Tenure. I am still his faculty mentor until he is promoted to Full Professor with Tenure.

Luksana Chaiswing, PhD, UK Department of Toxicology and Cancer Biology, thus far in her first three years since appointment as Assistant Professor (Tenure Track)

Changhai Tian, PhD, UK Department of Toxicology and Cancer Biology, thus far in his first three years since appointment as Assistant Professor (Tenure Track)

Offices Held in Professional Societies

Lexington Section, American Chemical Society, Vice Chairman, 1985-86, 1989-90

Lexington Section, American Chemical Society, Chairman-Elect, 1990-91

Lexington Section, American Chemical Society, Chairman, 1991-92

Community Activities

Organized the Committee to Combat Huntington's Disease for the Commonwealth of Kentucky. This group, formally known as the Kentucky Friends of CCHD, has the purposes of helping people with Huntington's disease and their families, of educating the public about Huntington's disease, and of providing blood samples for research in this disease

Organized and chaired the CROP Walk Against Hunger in Lexington, KY 1984 and 1985

Member, Board of Directors of the Horizon Center, a community center for the homeless, 1988-90

Chairman, Habitat for Humanity Fund Raising Committee

Member of the Vestry and Adult Sunday School Teacher, St. Michael's Episcopal Church, 2000

Parishoner, St. Mark’s Episcopal Church, Augusta, ME (Summers) 1976-2017

Parishoner, Emmanuel Lutheran Episcopal Church, Augusta, ME (Summers) 2018-present

Member of the Vestry, St. Martha’s Episcopal Church, Lexington, KY 2012-2022.

Parishoner, Grace United Lutheran Episcopal Church, Lexington, KY 2022-present

Miscellaneous

Member, Editorial Board of the *Journal of Membrane Science*, 1989-2006

Appointed Associate Editor, *Journal of Alzheimer's Disease*, 1999-2018.

Appointed Senior Editor, *Journal of Alzheimer's Disease*, 2002-present.

Member, Editorial Board, *Neurotoxicity Research*, 2002-2016.

Member, Editorial Board of *Aging Research Reviews*, 2000-present.

Member, Editorial Board, *Current Pharmaceutical Design*, 2003-preeent

Member, Editorial Board, *In Vivo* 1997-present

Member, Editorial Board, *Biomolecular Frontiers, 2014-present*

Member, Editorial Board, *Neurobiology of Disease*, 2006-2018

Member, Editorial Board, *Antioxidants and Redox Signaling*, 2008-present

Member, Editorial Board, *Biochimica et Biophysica Acta-Molecular Basis of Disease*, 2008-present

Member, Editorial Board, *Pharmacological Research*, 2012-present

Member, Editorial Board, *Frontiers in Pharmacology*, 2014-present

Member, Editorial Board (Elected), *Free Radical Biology and Medicine*, 2016-present

Member, Editorial Board, *Gerotarget (Age and Age-related Diseases)*, 2015-present.

Member, Editorial Board, *Cancer Letters*, 2015-present.

Member, Editorial Board, *Antioxidants*, 2020-present

Appointed to Advisory Board of the Proposed Southeastern Electron Spin Resonance Research Center, University of Alabama, Expired.

Consultant to Medical Advisory Board, University of Indiana Medical School on Proposals to use ESR equipment, Expired

Consultant, Bend Research, Inc., Bend, Oregon, Expired.

Consultant, Cellco, Inc., Germantown, Maryland, Expired.

Consultant, Centaur Pharmaceuticals, Inc., Sunnyvale, California, Expired.

Consultant, Panacea Pharmaceuticals, Inc., Bethesda, Maryland, Expired.

Consultant, Bayer Pharmaceuticals, Inc., San Francisco, CA, Expired.

Consultant, Jazz Pharmaceuticals, Inc., 2018-2019, Expired

Invited Faculty, Managers School, Hoechst-Roussel Pharmaceutical Corporation.

External Review Committee for the Ph.D. Program in Chemistry at Ohio University, 1995.

Member, International Task Force for the Use of Antioxidants in Age-Related Neurodegenerative Disorders, Sigma-Tau Pharmaceuticals, Rome, ITALY.

Member, Scientific Advisory Board, Panacea Pharmaceuticals, Inc., Bethesda, Maryland.

Member, Scientific Advisory Council for the 2nd International Conference on Heme Oxygenase/CO, Catania, ITALY, 2002.

Selected, Doctorate Visiting Faculty Professoriate Program, University of Catania, Italy, 2002-present.

Selected, Ph.D. Dissertation Outside Examiner, Department of Clinical Biochemistry, University of Madras, India.

Appointed, External Advisory Board for the Life Sciences/Neurosciences Program, National University of Singapore. Ongoing.

Member, External Grant Review Panel, Ministry of Education, Government of Singapore, 2001-2008

Member, External Grant Review Panel, Ministry of Health, Government of Singapore, 2021-2026

Invited Seminars Given At:

Department of Biochemistry, University of Kentucky
Department of Chemistry, Western Kentucky University
Department of Chemistry, Maryville College
Department of Chemistry, Ohio University
Department of Biophysics, Indiana University Medical School
Department of Chemistry, Bellarmine College
Department of Chemistry, University of Louisville
Department of Pharmacology, Mayo Clinic
Department of Biological Chemistry, University of Cincinnati
Department of Biology, Davidson College
Department of Chemistry, Ohio State University
Department of Physiology and Biophysics, University of Kentucky
Department of Neurological Sciences, University of Newcastle-Upon-Tyne, England
Department of Chemistry, Murray State University
Department of Biochemistry, University of Chicago
Department of Anatomy, University of Kentucky
Department of Chemistry, Duke University
Department of Biochemistry, University of Maryland
Department of Biochemistry, St. Jude Children's Research Hospital
Department of Biochemistry, University of Tennessee
Department of Chemistry, University of Cincinnati
Department of Chemistry, University of Maine
Department of Physics, Indiana University-Purdue University at Indianapolis
College of Pharmacy, University of Kentucky
Department of Nutritional Sciences, University of Guelph
Department of Biochemistry, Indiana University Medical School at Gary, Indiana
Department of Chemistry, Ohio State University
Department of Chemistry, Warren Wilson College
Department of Hematology, University of California-San Francisco
Department of Pharmacology, University of Washington
Department of Biochemistry, Oregon Health Sciences University

Department of Medicinal Chemistry, University of Cincinnati
Department of Biophysics, Indiana University
Department of Chemistry, University of Maine
Department of Molecular Biology, Centre College
Department of Chemistry, Duquesne University
Department of Chemistry, Bethany College
Department of Chemistry, University of Padua, Italy
Department of Chemistry, University of Florence, Italy
Department of Natural Sciences, Morehead State University
Department of Chemistry, Marshall University
College of Pharmacy, University of Kentucky
Department of Mathematics and Science, Trevecca Nazarene College
Department of Physiology and Molecular Biophysics, Vanderbilt University
Department of Chemistry, Ohio Wesleyan University
Department of Chemistry, University of Massachusetts
Department of Chemistry, Indiana University
Center on Aging, University of Kentucky
Center of Gerontology, University of Michigan
Department of Chemistry, University of Detroit
Department of Chemistry, University of Maine
Department of Chemistry, Northern Kentucky University
Department of Chemistry, Case Western Reserve University
Department of Chemistry, University of Cincinnati
Department of Chemistry, University of Memphis
Department of Ophthalmology, University of Louisville
Department of Pharmacology, University of Colorado
Department of Chemistry, Eastern Kentucky University
Sanders Brown Center on Aging, University of Kentucky
Department of Chemistry, Duke University
Department of Chemistry, University of Cincinnati
Institute for Behavioral Genetics, University of Colorado
College of Pharmacy, University of Cincinnati
Division of Materials Science, U. S. Army Natick Research Laboratory
Department of Pharmacology, University of North Texas
Department of Nutritional Biochemistry, Tufts University
Department of Gerontology, St. Louis University
Department of Chemistry, University of Catania, Italy
Department of Chemistry, University of Calgary, Canada
Department of Neurology, University of Calgary, Canada
Department of Chemistry, Johns Hopkins University
Department of Pharmaceutical Chemistry, Kansas University
Department of Pathology, University of Pennsylvania
Department of Chemistry, Indiana University
Department of Pathology, University of Melborne (Australia)
Department of Psychiatry, University of Western Australia
Department of Psychiatry, Graylands Psychiatric Hospital, Perth (Australia)
Department of Neuroscience, Gerontology Research Center, National Institute on Aging
Department of Molecular Pharmacology, University of Kentucky
Department of Chemistry, University of Louisville
Department of Pathology, University of Washington
Department of Biology, University of Padova (Italy)
Department of Biochemistry, University of Bologna (Italy)
Department of Pharmacology, University of Florence (Italy)

Department of Biology, University of Rome, Tor Vergata, Rome (Italy)
Department of Internal Medicine, University of Perugia, Perugia (Italy)
Department of Biochemistry, University of Missouri, Columbia
Department of Molecular and Medical Pharmacology, University of Texas-San Antonio
Department of Biochemistry, Kansas University Medical Center
Department of Radiology, Medical College of Wisconsin
Center of Neurobiology, National University of Singapore
Department of Biochemistry, University of Rome La Sapeniza, Rome, Italy
Department of Biochemistry, University Bio-Medical Campus of Rome, Rome, Italy
Buck Institute on Aging, Marin County, CA
Department of Neurology, Southern Illinois University School of Medicine, Springfield, IL
Center on Brain Aging, University of California at Irvine, Irvine, CA
Department of Biochemical Sciences, University of Rome La Sapienza, Rome, Italy
Department of Chemistry, Western Kentucky University
Department of Physiology, University of Kentucky
Sanders-Brown Center on Aging, University of Kentucky
Department of Neurobiology, Duke University
College of Pharmacy, Purdue University
Aging Research Institute, University of Florida
Linus Pauling Institute, Oregon State University
Department of Biochemistry, Cornell University Medical Center/Burke Medical Res Center
Department of Neuroscience, University of Pittsburgh
Buck Institute for Age Research, Novato, CA
Department of Biochemistry, Indiana University School of Medicine
Department of Pharmacology, Boston University School of Medicine
Department of Cell Biology, Harvard University
Department of Pharmacology, Georgetown University, Washington, DC
Department of Pharmacology, Medical College of Virginia
Department of Pharmacology, University of Louisville
Department of Chemistry, University of Catania
Department of Biochemical Sciences, University of Rome
Department of Gerontology, University of Perugia
Department of Biochemistry, University of Bologna
Department of Pharmacology, University of Brescia
Department of Pharmacology, Catholic University of Rome
Department of Chemistry, University of North Carolina, Wilmington
Department of Pharmacology, Temple University
Department of Biochemistry, National University of Singapore
Barshop Institute on Aging, University of Texas, San Antonio
Department of Chemistry, Cornell University
Department of Biochemistry, National University of Singapore
Department of Chemical Engineering, University of Arkansas
Department of Neurosciences, Cornell Weil College of Medicine
Center for Free Radical Biology, University of Nebraska
Sanford Children's Research Center, Sioux Falls, SD
Department of Gerontology, University of Washington
Department of Chemistry, University of Pittsburgh
Department of Pathology, University of Kentucky
Department of Pathology, University of California at Irvine
Department of Chemistry, University of Maine
Burke Neurological Institute, Cornell Medical School
Society for Free Radical Research International-Europe
Inaugural Distinguished Science Lecture, Institute of Medicine, University of Maine

University of Texas at Dallas, Department of Neuroscience

Published Abstracts

D.A. Butterfield and D.B. Chesnut, "A Spin Label Study of Model Membrane Systems: Radical Decay Kinetics in an Electron Transport Enzyme System," *Trans. S.E. Amer. Chem. Soc., 25,* 161 (1973).

A.D. Roses, D.A. Butterfield and D.B. Chesnut, "Electron Spin Resonance Studies From Patients With Myotonic Muscular Dystrophy," *Trans. Amer. Soc. Neurochem., 5,* 73 (1974).

D.A. Butterfield, A.D. Roses, D.B. Chesnut and S.H. Appel, "ESR Studies of Membrane Proteins in Erythrocytes in Myotonic Muscular Dystrophy," *Trans. Amer. Soc. Neurochem., 6,* 163 (1975).

** A.D. Roses, S.H. Appel, D.A. Butterfield, S.E. Miller and D.B. Chesnut, "Specificity of Biochemical and Biophysical Tests in Duchenne and Myotonic Muscular Dystrophy Carrier States, and Congenital Myotonia," *Arch. Neurol., 32,* 355 (1975).

D.A. Butterfield, A.D. Roses, S.H. Appel and D.B. Chesnut, "ESR Studies of RBC Membrane Proteins in MyD," *Trans. S.E.-S.W. Amer. Chem. Soc., 27,* 150 (1975).

D.A. Butterfield, "Studies on the Molecular Basis of Muscular Dystrophy: Spin Label Investigations of Membrane Proteins in Duchenne and Myotonic Muscular Dystrophy and Congenital Myotonia," *Trans. Amer. Chem. Soc., 173,* 180 (1977).

D.A. Butterfield and W.R. Markesbery, "Biophysical and Biochemical Studies of Erythrocyte Membranes in Huntington's Disease," *Trans. Amer. Chem. Soc., 176,* 113 (1978).

D.A. Butterfield, "ESR and Other Studies of Erythrocyte Membranes in the Inherited Neurological Disease, Huntington's Disease," *Trans. S.E. Mag. Reson. Soc.,* B2 (1978).

J.B. Feix and D.A. Butterfield, "Specific Spin Labeling of Sialic Acid of Glycoproteins and Glycolipids of Erythrocyte Membranes: A New Method for the Study of Cell-Surface Interactions," *Trans. S.E. Amer. Chem. Soc., 31,* 42 (1979).

D.A. Butterfield, P.F. Doorley and W.R. Markesbery, "Huntington's Disease: Evidence of a Cell Membrane Surface Defect," *Trans. Amer. Chem. Soc., 179,* 186 (1979).

D.A. Butterfield and W.R. Markesbery, "Huntington's Disease: A Generalized Membrane Defect," *Trans. S.E.-S.W. Amer. Chem. Soc., 32,* 165 (1980).

W.A. Bialas, W.R. Markesbery and D.A. Butterfield, "Increased Rate of Chloride Transport Across Erythrocyte Membranes in Huntington's Disease," *Trans. S.E.-S.W. Amer. Chem. Soc., 32,* 166 (1980).

D.A. Butterfield, "On the Use of a Piperidine Maleimide Spin Label to Study Membrane Proteins in Erythrocyte Membranes," *Trans. S.E. Mag. Reson. Soc.*, *13*, D3 (1981).

D.A. Butterfield, "Spin Labeling in Neurological Disorders," *Trans. S.E. Amer. Chem. Soc.*, *33*, 86 (1981).

B.T. Farmer, II and D.A. Butterfield, "Spin Label Studies of Membrane Proteins in Human Lymphocytes," *Trans. S.E. Amer. Chem. Soc.*, *33*, 91 (1981).

D.A. Butterfield, "Electron Spin Resonance Studies of the Effects of Naturally-Occurring Excitotoxic Amino Acid Analogues on the Physical State of Membrane Proteins in Human Erythrocyte," *Trans. S.E. Amer. Chem. Soc.*, *33*, 92 (1981).

D.A. Butterfield and W.R. Markesbery, "Time-Dependence of, and Effects of Cellular Aging On, Chloride Efflux Across Erythrocyte Membranes in Huntington's Disease," *Trans. Soc. Neurosci.*, *12*, 286 (1982).

D.A. Butterfield, T.M. Harmon and B.T. Farmer, II, "Spin-Label Studies of Membrane Skeletal Protein Interactions in Human Erythrocytes," *Trans. S.E. Mag. Reson. Soc.*, *16*, 5 (1984).

B.T. Farmer, II, M.T. McEllistrom and D.A. Butterfield, "Interaction of the Neurotoxin, Quinolinic Acid, and Its Analogues With Erythrocyte and Hippocampal Membranes," *Trans. S.E. Mag. Reson. Soc.*, *16*, 15 (1984).

J.W. Wyse and D.A. Butterfield, "ESR Studies of the Effects of Al^{3+}, Cd^{2+}, and Hg^{2+} on Erythrocyte Membranes," *Trans. S.E. Amer. Chem. Soc.*, *36*, 224 (1984).

** D.A. Butterfield, N. Nicholas and W.R. Markesbery, "Increased Rate of Choline Efflux Across Erythrocyte Membranes in Alzheimer's Disease," *Neurology*, *34*, 121 (1984).

** D.A. Butterfield and B.T. Farmer, II, "ESR Studies of the Erythrocyte Membrane Skeletal Network: Influence of the State of Aggregation of Spectrin on the Physical State of Membrane Proteins, Bilayer Lipids, and Cell-Surface Carbohydrates," *J. Cell. Biochem.*, *9*, 5 (1985).

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D.A. Butterfield, J.W. Wyse, V.L. Abbot and A.J. Nonneman, "Electron Spin Resonance and Morphological Studies of the Effects of Quinolinic and Phthalic Acid Neurotoxins on RBC Proteins and Rat Hippocampus," *Trans. S.E. Amer. Chem. Soc.*, *38*, 138 (1986).

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J.W. Wyse, J.D. Jarrell and D.A. Butterfield, "The Influence of Terminal Sialic Acid on the Motion of Terminal Galactose Residues in Human Erythrocyte Membranes," *Trans. S.E. Amer. Chem. Soc.*, *38*, 140 (1986).

** A.J. Nonneman, D.A. Butterfield, T. Elder, J. Slevin and R.E. Forester, "Excitotoxin Lesions of Rat Hippocampus: Quinolinic Acid and Related Compounds," *Neurosci. Abstr.*, *12* (1986).

** D.A. Butterfield, J.W. Wyse, R.S. Franco and O. Martelo, "An Electron Spin Resonance (ESR) Study of Skeletal Protein Interactions in Human Erythrocyte Membranes Exposed to Polyanions and in Membranes Prepared From Inositol Hexaphosphate (IHP)-Incorporated, Low-Affinity Erythrocytes," *Blood*, *68*, 33a (1986).

D.A. Butterfield, S. Umhauer, R.D. Guthrie and B.L. Jensen, "Photolysis of the Anti-Cancer Drug Lysodren and Its Methylated Analogue(Mitometh) in Solution: Evidence for Mechanism of Decomposition and Implications for Biological Metabolism," *Trans. S.E. Mag. Reson. Soc.*, *19*, 3 (1987).

D.A. Butterfield, "Polyamines and Polyphosphates Affect the Structure of the Skeletal Protein Network and Cell-Surface Carbohydrates in Human Erythrocyte Membranes: An Electron Spin Resonance Study," *Trans. 1987 International Congress on Membranes and Membrane Processes*, (1987).

** D.A. Butterfield, B.T. Farmer, II and J.W. Wyse, "Modulation of Skeletal Protein-Protein Interactions in and Evidence for Transmembrane Effects of Spermine Across Erythrocyte Membranes," *Blood*, *70*, 37a (1987).

** D.A. Butterfield, "Specific Chemical Modulation of Skeletal Protein-Protein Interactions Leads to Specific Alterations of the Physical State of Cell-Surface Sialic Acid: Implications to Transmembrane Signaling and Hemolytic Anemias," *J. Cell. Biochem.*, *13*, 229 (1989).

D.A. Butterfield, "Molecular Interactions of 1,2,3,4-Tetrahydro-9-Aminoacridine (THA) With Erythrocyte Membranes," *Proc. Second Int. Symp. on Spin Trapping and Aminoxyl Radical Chem.*, (1989).

D.A. Butterfield, "Electron Paramagnetic Resonance Studies of the Interaction of 9-Amino-1,2,3,4-Tetrahydroacridine, A Potential Drug for the Treatment of Alzheimer's Disease, With Erythrocyte Membranes," *Proc. 2nd International Congress on Membranes and Membrane Processes, Vol. I,* 1990, pp. 255-257.

D.A. Butterfield, "Biophysical and Biochemical Investigations of Transmembrane Signaling," *Trans. Amer. Chem. Soc.*, *19*9, 123 (1990).

** D.A. Butterfield, "Molecular Interaction of 1,2,3,4-Tetrahydro-9-Aminoacridine (THA), a Proposed Drug for the Treatment of Alzheimer's Disease, With the Skeletal Network of Proteins in Erythrocyte Membranes," *Neurobiol. Aging*, *11*, 278-279

D.A. Butterfield, S.A. Umhauer, D.T. Isbell and A. Rangachari, "Spin Labeling Studies of the Interactions of Potentially Useful Therapeutic Agents for the Treatment of Alzheimer's Disease With Cytoskeletal Proteins in Erythrocyte and Brain

Synaptosomal Membranes," *Trans. Int. Conf. on Recent Advances in ESR Spectroscopy*, 19 (1991).

D.A. Butterfield and P. Zhuang, "Magnetic Resonance and Kinetic Characterization of a Membrane-Immobilized Proteolytic Enzyme," *Trans Amer. Inst. Chem. Eng. Summer National Meeting*, 5e (1991).

** S.G. Kottayil, A.G. Houdi, D.A. Butterfield and P.A. Crooks, "Synthesis, Characterization, and Relative Analgesic Potencies of the 6-Sulfate Conjugates of some 3-Substituted Morphine, Dihydromorphine, and N-Methyl Morphinium Analogs," *Trans. Amer. Chem. Soc.*, 201 (1991).

S.G. Kottayil, D.A. Butterfield, A.A. Hussain and P.A. Crooks, "Synthesis and Hydrolytic Behavior of the 0-Sulfate Conjugate of Salicylamide," *Trans. Amer. Chem. Soc. Midwest. Reg. Mtg.*, (1991).

D.A. Butterfield, A. Rangachari, D.T. Isbell and S.A. Umhauer, "Spin Labeling Studies of Interactions of Potentially Useful Alzheimer's Disease Therapeutic Agents with Erythrocyte and Brain Cytoskeletal Proteins," *Trans. Amer. Chem. Soc. Central Reg. Mtg.*, 93 (1992).

S.G. Kottayil, A.A. Houdi, B. Sun, D.A. Butterfield and P.A. Crooks, "Characterization and Analgesic Activity of 3-Acyl Derivatives of Morphine 6-O-Sulfate," *Trans. Amer. Chem. Soc. Central Reg. Mtg.*, 123 (1992).

A.A. Houdi, S.G. Kottayil, D.A. Butterfield, M. Lu, A.A. Hussain and P.A. Crooks, "Comparative Pharmacological Effects of Drugs and Their O-Sulfate Conjugates," *Trans. Amer. Chem. Soc. Central Reg. Mtg.*, 124 (1992).

P. Zhuang and D.A. Butterfield, "Optimization of Covalently Coupling Enzymes to Polymeric Membranes: an EPR Study," *Trans. North American Membrane Soc., 5*, 20 (1992).

** D.A. Butterfield, S. Umhauer, D. Isbell and A. Rangachari, "Changes in Membrane Cytoskeletal Protein-Protein Interactions Upon Interaction of Potential Alzheimer's Disease Therapeutic Agents," *Neurobiol. Aging, 13*, S58 (1992).

P. Zhuang and D.A. Butterfield, "Understanding Enzyme Bioreactor Systems," *Proc. Membr. Tech. Planning Conf.*, 10 (1992).

D.A. Butterfield, S. Umhauer, D. Isbell, A. Rangachari and J. Carney, "Changes in Membrane Cytoskeletal Protein-Protein Interactions Upon Interaction of Potential Alzheimer's Disease Therapeutic Agents," *Trans. S. E. Magnetic Reson. Conf., 24*, 10 (1992).

M.E. Harris, J.M. Carney, M.P. Mattson, K. Hensley and D.A. Butterfield, "Free Radicals, β-Amyloid Aggregation and Neurotoxicity," *Trans. Soc. Neurosci. Nat. Mtg.*, (1993).

** K. Hensley, J. Carney, N. Hall, W. Shaw and D.A. Butterfield, "EPR Investigations of Free Radical Induced Alterations in Neocortical Synaptosomal Membrane Protein Infrastructure: Relevance to Aging and Alzheimer's Disease," *Free Rad. Biol. Med., 13*, 525 (1993).

P. Shrewsbury, K. Hensley and D.A. Butterfield, "EPR Spin Labeling Studies of the Interaction of HP749, a Proposed Therapeutic Agent for Alzheimer's Disease, with Erythrocyte Membranes," *Trans. Amer. Inst. Chem. Eng. National Meeting*, (1993).

D.A. Butterfield, K. Glauner and J. Lee, "Molecular Recognition in Bioseparations: EPR Studies of Spin-Labeled Papain Immobilized on Modified Polysulfone Membranes via the Avidin-Biotin Complex," *Trans. Amer. Chem. Soc.*, *207*, 132 (1994).

D.A. Butterfield, J. Lee and D. Bhattacharyya, "Biofunctional Membranes: Spin Labeling Comparison of Active-Site Structure of Papain Immobilized on Modified Polysulfone and Modified Cellulose Acetate Membranes," *Trans. Amer. Chem. Soc.*, *207*, 181 (1994).

W.S. Shaw and D.A. Butterfield, "Electron Paramagnetic Resonance Investigations of Brain Synaptosomal Membranes with Oxidation/Spermine," *Trans. Amer. Chem. Soc.*, *207*, 195 (1994).

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K. Hensley, J. Carney, M. Mattson, R. Floyd and D.A. Butterfield, "A Free Radical Hypothesis to Explain β-Amyloid Aggregation and Toxicity," *Trans Internat. Conf. on Oxidative Stress and Aging*, (1994).

S. Ganapathi, D.A. Butterfield and D. Bhattacharyya, "Biofunctional Membrane Reactors: A Study of the Kinetics and Conformational Changes of Immobilized Papain," *Trans. Amer. Inst. Chem. Eng. National Meeting*, (1994).

E.A. Decker, W.K. M. Chan, J.T. Calvech and D.A. Butterfield, "The Antioxidatant Mechanism of Carnosine, a Skeletal Muscle Dipeptide," *Trans. Atlantic Fisheries Conf.*, (1994).

A. Bhardwaj, J. Lee and D.A. Butterfield, "Biofunctional Membranes: The Study of Papain Immobilized on the Surface of Modified Polyethersulfone Membrane Through Avidin-Biotin Linkage," *Proceedings North American Membrane Society, 7*, 39 (1995).

R. Subramaniam, B.J. Howard, K. Hensley, M. Aksenova, J.M. Carney and D.A. Butterfield, "β-Amyloid(32-35) Generates Reactive Free Radicals That Are Toxic to Biomolecules: Implications to Alzheimer's Disease," *Trans. Southeast/Southwest American Chemical Society, 47*, 120 (1995).

K. Hensley, R. Subramaniam, N. Hall, M. Aksenova, M. Aksenov, W.R. Markesbery, J.M. Carney and D.A. Butterfield, "Evidence for Enhanced Regional Protein Oxidation in the Alzheimer's Brain," *Trans. Southeast/Southwest American Chemical Society, 47*, 121 (1995).

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M.Y. Aksenov, M.V. Aksenova, M.E. Harris, K. Hensley, D.A. Butterfield and J.M. Carney, "Enhancement of Aβ (1-40)-Mediated Neurotoxicity by Glutamine Synthetase," *Trans. Southeast/Southwest American Chemical Society, 47*, 123 (1995).

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**Refereed Abstracts; ‡ Invited Speaker.

Referee For:

Journal of the American Chemical Society;
Biochemistry;
Journal of Biological Chemistry;
Archives of Biochemistry and Biophysics;
Biochimica et Biophysica Acta;
Biochemical Pharmacology;
Journal of Neurochemistry;
Experimental Neurology;
Experimental Gerontology
Journal of Membrane Science:
Journal of the Neurological Sciences;
Neuroscience Letters;
Life Sciences;
Neurochemical Research;
Aging Research Reviews;
Neurobiology of Aging;
Neurobiology of Disease;
Neuroscience Research Communications;
Neuroscience;
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Journal of Physical Chemistry;
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Journal of Chemical Education;
Journal of Gerontology;
Brain Research;
Free Radical Biology & Medicine;
European Journal of Neurology;
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Amyloid;
Molecular and Cellular Biochemistry;
Neurology;
Molecular Psychiatry;
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Journal of Proteome Research;
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Proceedings of the National Academy of Sciences, USA;
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Biological Procedures;
Clinical Cancer Research Online;
Analytical Biochemistry;
International Journal of Alzheimer's Disease;
Molecular Neurobiology;
Cytokine;
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Progress in Neuropsychopharmacology & Biological Psychiatry;

Trends in Endocrinology and Metabolism;
Pharmacological Sciences;
Pharmacological Research;
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Journal of Psychiatry;
Physiology Reviews;
Inorganic Chemistry;
Bioinorganic & Medicinal Chemistry Letters;
Journal of Nutritional Biochemistry;
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Cancer Chemotherapy and Pharmacology;
Cancer Letters;
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