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Education
Bristol University, England, BSc, 1966-1969; DSc, 1982, Chemistry
Sheffield University, England, PhD, 1969-1972, Biophysical Chemistry
Indiana University, Bloomington, Indiana, Postdoctoral, 1972-1974, Biophysical Chemistry
M.I.T., Cambridge, Massachusetts, Visiting Scientist, 1974-1975, Chemistry

Awards and Fellowships
Thomas Malkin Prize (1968)
William Edward Garner Prize (1969)
European Molecular Biology Organization Fellowship (1972-1974)
The Meldola Medal and Prize of The Royal Society of Chemistry (1977)
Alfred P. Sloan Research Fellowship (1978-1980)
Fellow, Center for Advanced Study, 1979-1980
U.S. Public Health Service Research Career Development Award (1979-1984)
American Heart Association Louis N. Katz Basic Science Research Prize (1980)
Fellow of the Royal Society of Chemistry (1981)
The Colworth Medal of the Biochemical Society (1983)
American Chemical Society Award in Pure Chemistry (1984)
Fellow, American Physical Society (1993)
Richard G. and Carole J. Cline University Senior Scholar (1995)
Royal Society of Chemistry Award in Spectroscopy (1995)
Associate, Center for Advanced Study (2000-2001)
Alumni Research Scholar Professor of Chemistry (2003-2013)
Campus Award for Excellence in Guiding Undergraduate Research (2006)
Fellow, American Association for the Advancement of Science (2008)
Royal Society of Chemistry Award in Soft Matter and Biophysical Chemistry (2009)
Biophysical Society Avanti Award in Lipids (2011)

Positions Held
ILEA Undergraduate, Bristol University, 9/66-6/69, with J. MacMillan, FRS, G. Eglinton, FRS.
SRC Scholar, Sheffield University, 10/69-5/72, with D. Chapman, FRS
EMBO Fellow and Research Associate, Indiana University, 7/72-12/74, with A. Allerhand
Visiting Scientist, M.I.T., 12/74-6/75, with J. S. Waugh
Assistant Professor of Chemistry, University of Illinois at Urbana-Champaign, 1975-1980
Associate Professor of Chemistry, University of Illinois at Urbana-Champaign, 1980-1982
Professor of Chemistry, University of Illinois at Urbana-Champaign, 1982-2002
Professor of Biophysics, 1995-present
Alumni Research Scholar Professor, 2003-2013
Harriet A. Harlin Professor of Chemistry, 2012-present

Publications (N=440; ~25,000 citations; h-index = 81)

1. E. Oldfield and D. Chapman, Biochem. Biophys. Res. Commun., 43, 610-616 (1971), Effects of cholesterol and cholesterol derivatives on hydrocarbon chain mobility in lipids.

2. E. Oldfield and D. Chapman, Biochem. Biophys. Res. Commun., 43, 949-953 (1971), Carbon-13 pulse Fourier transform NMR of lecithins.

3. E. Oldfield, D. Chapman and W. Derbyshire, FEBS Lett., 16, 102-104 (1971), Deuteron resonance: a novel approach to the study of hydrocarbon chain mobility in membrane systems.

4. E. Oldfield, J. Marsden and D. Chapman, Chem. Phys. Lipids, 7, 1-8 (1971), Proton NMR relaxation study of mobility in lipid-water systems.

5. E. Oldfield, K. M. Keough and D. Chapman, FEBS Lett., 20, 344-346 (1972), The study of hydrocarbon chain mobility in membrane systems using spin-label probes.

6. E. Oldfield, D. Chapman, and W. Derbyshire, Chem. Phys. Lipids, 9, 69-81 (1972), Lipid mobility in Acholeplasma membranes using deuteron magnetic resonance.

7. E. Oldfield and D. Chapman, FEBS Lett., 21, 303-306 (1972), Molecular dynamics of cerebroside-cholesterol and sphingomyelin-cholesterol interactions: implications for myelin membrane structure.

8. E. Oldfield and D. Chapman, FEBS Lett., 23, 285-297 (1972), Dynamics of lipids in membranes: heterogeneity and the role of cholesterol.

9. E. Oldfield, J. Chem. Soc., Chem. Comm., 719-720 (1972), Gas-chromatography mass-spectrometry of biosynthetic ^{1}H-^{2}H hybrid fatty acid methyl esters.

10. D. Chapman, E. Oldfield, D. Doskoč ilová and B. Schneider, FEBS Lett., 25, 261-264 (1972), NMR of gel and liquid crystalline phospholipids spinning at the "magic angle."

11. A. Allerhand, R. F. Childers, R. A. Goodman, E. Oldfield and X. Ysern, Amer. Lab., 4, 19-26 (1972), Increased sensitivity in ^{13}C FT NMR using 20mm sample tubes.

12. K. M. Keough, E. Oldfield, D. Chapman and P. Beynon, Chem. Phys. Lipids, 10, 37-50 (1973), Carbon-13 and proton nuclear magnetic resonance of unsonicated model and mitochondrial membranes.

13. D. Chapman and E. Oldfield, in "Methods in Enzymology" (eds. S. P. Colowick and N. O. Kaplan) Biomembranes, Vol. 32, 198-211, 1973. Nuclear magnetic resonance studies of biological and model membrane systems.

14. A. Allerhand, R. F. Childers and E. Oldfield, Biochemistry, 12, 1335-1341 (1973), Natural-abundance carbon-13 nuclear magnetic resonance studies in 20mm sample tubes. Observation of numerous single-carbon resonances of hen egg-white lysozyme.

15. A. Allerhand and E. Oldfield, J. Chem. Phys., 58, 3115-3116 (1973), Determination of C-C-H bond angles and models for internal rotation of side chains of biopolymers in solution.

16. A. Allerhand, R. F. Childers and E. Oldfield, Ann. N. Y. Acad. Sci., 222, 764-777 (1973), Carbon-13 Fourier transform NMR studies in 20mm sample tubes: observation of individual carbon sites in proteins.

17. E. Oldfield, Science, 180, 982-983 (1973), Are cell membranes fluid?

18. R. A. Goodman, E. Oldfield, and A. Allerhand, J. Am. Chem. Soc., 95, 7553-7558 (1973), Assignments in the natural abundance carbon-13 nuclear magnetic resonance spectrum of chlorophyll a and a study of segmental motion in neat phytol.

19. A. Allerhand and E. Oldfield, Biochemistry, 12, 3428-3433 (1973), Determination of rotational mobilities of backbone and side chain carbons of poly(γ-benzyl L-glutamate) in the helical and random-coil states from measurements of carbon-13 relaxation times and nuclear Overhauser enhancements.

20. E. Oldfield and A. Allerhand, Proc. Natl. Acad. Sci. U.S.A., 70, 3531-3535 (1973), Cytochrome c. Observation of numerous single carbon sites of the reduced and oxidized species by means of natural abundance C-13 nuclear magnetic resonance spectroscopy.

21. A. Allerhand, R. F. Childers and E. Oldfield, J. Mag. Res., 11, 272-278 (1973), Carbon-13 Fourier transform NMR at 14.2 kG in a 20mm probe.

22. E. Oldfield and A. Allerhand, J. Am. Chem. Soc., 97, 221-224 (1975), Identification of tryptophan resonances in natural abundance carbon-13 nuclear magnetic resonance spectra of proteins. Application of partially relaxed Fourier transform spectroscopy.

23. E. Oldfield, R. S. Norton and A. Allerhand, J. Biol. Chem., 250, 6368-6380 (1975), Studies of individual carbon sites of proteins in solution by natural abundance carbon-13 nuclear magnetic resonance spectroscopy. Relaxation behavior.

24. E. Oldfield, R. S. Norton and A. Allerhand, J. Biol. Chem., 250, 6381-6402 (1975), Studies of individual carbon sites of proteins in solution by natural abundance carbon-13 nuclear magnetic resonance spectroscopy. Strategies for assignments.

25. E. Oldfield and A. Allerhand, J. Biol. Chem., 250, 6403-6407 (1975), Studies of individual carbon sites of hemoglobins in solution by natural abundance carbon-13 nuclear magnetic resonance spectroscopy.

26. E. Oldfield, M. Meadows and M. Glaser, J. Biol. Chem., 251, 6147-6149 (1976), Deuterium magnetic resonance spectroscopy of isotopically labelled mammalian cells.

27. R. A. Haberkorn, R G. Griffin, M. D. Meadows and E. Oldfield, J. Am. Chem. Soc., 99, 7353-7355 (1977), Deuterium nuclear magnetic resonance investigation of the dipalmitoyl lecithin-cholesterol-water system.

28. E. Oldfield, M. Glaser, R. Griffin, R. Haberkorn, R. Jacobs, M. Meadows, D. Rice, R. Skarjune and D. Worcester, in "Biomolecular Structure and Function: A Symposium on Biophysical Approaches to Biological Problems" (Academic Press, 1978) 55-64, Spectroscopic studies of specifically deuterium labelled membrane systems.

29. E. Oldfield and M. Meadows, J. Mag. Res., 31, 327-335 (1978), Sideways-spinning 20mm tube probe for widebore superconducting magnet spectrometer systems.

30. E. Oldfield, M. Meadows, D. Rice and R. Jacobs, Biochemistry, 17, 2727-2740 (1978), Spectroscopic studies of specifically deuterium labelled membrane systems. Nuclear magnetic resonance investigation of the effects of cholesterol in model systems.

31. E. Oldfield and R. P. Skarjune, J. Mag. Res., 31, 527-531 (1978), Spin-echo and spin-lock natural abundance carbon-13 Fourier transform NMR of proteins using a sideways spinning 20mm tube probe.

32. E. Oldfield, R. Gilmore, M. Glaser, H. S. Gutowsky, J. C. Hsung, S. Y. Kang, T. E. King, M. Meadows and D. Rice, Proc. Natl. Acad. Sci. U.S.A., 75, 4657-4660 (1978), Deuterium nuclear magnetic resonance investigation of the effects of proteins and polypeptides on hydrocarbon chain order in model membrane systems.

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34. G. Turner and E. Oldfield, Nature, 277, 669-670 (1979), Effect of a local anesthetic on hydrocarbon chain order in membranes.

35. S. Y. Kang, H. S. Gutowsky, J. C. Hsung, R. Jacobs, T. E. King, D. Rice and E. Oldfield, Biochemistry, 18, 3257-3267 (1979), Nuclear magnetic resonance investigation of cytochrome oxidase-phospholipid interactions: A new model for boundary lipid.

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37. D. Rice and E. Oldfield, Biochemistry, 18, 3272-3279 (1979), Deuterium nuclear magnetic resonance studies of the interaction between dimyristoylphosphatidylcholine and gramicidin A'.

38. R. Jacobs and E. Oldfield, Biochemistry, 18, 3280-3285 (1979), Deuterium nuclear magnetic resonance investigation of dimyristoyllecithin-dipalmitoyllecithin and dimyristoyllecithin-cholesterol mixtures.

39. R. Skarjune and E. Oldfield, Biochim. Biophys. Acta., 556, 208-218 (1979), Physical studies of cell surface and cell membrane structure. Deuterium nuclear magnetic resonance investigation of deuterium-labelled N-hexadecanoyl-galactosylceramides (cerebrosides).

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42. R. Skarjune and E. Oldfield, Biochemistry, 18, 5903-5909 (1979), Physical studies of cell surface and cell membrane structure. Determination of phospholipid head group organization by deuterium and phosphorus nuclear magnetic resonance spectroscopy.

43. R. Bansil, J. Day, M. Meadows, D. Rice and E. Oldfield, Biochemistry, 19, 1938-1943 (1980), Laser Raman spectroscopic study of specifically deuterated phospholipid bilayers.

44. E. Oldfield and T. M. Rothgeb, J. Am. Chem. Soc., 102, 3635-3637 (1980), NMR of individual sites in protein crystals. Magnetic ordering effects.

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51. T. M. Rothgeb and E. Oldfield, in "Symposium on Interaction between iron and proteins in oxygen and electron transport," (eds. C. Ho and W. A. Eaton), Elsevier, 1982, 91-95, NMR and ESR of myoglobin crystals using magnetic ordering.

52. E. Oldfield, N. Janes, R. Kinsey, A. Kintanar, R. W. K. Lee, T. M. Rothgeb, S. Schramm, R. Skarjune, R. Smith and M. D. Tsai, Biochem. Soc. Symp., 46, 155-181 (1981), Protein crystals, membrane proteins and membrane lipids. Recent advances in the study of their static and dynamic structures using nuclear magnetic resonance spectroscopic techniques.

53. E. Oldfield, in "Membranes and Transport, 1982" (ed., A. Martonosi), Vol. 1, 115-123, Plenum, New York and London. NMR of protein-lipid interactions in model and biological membrane systems.

54. T. M. Rothgeb and E. Oldfield, J. Biol. Chem., 256, 6004-6009 (1981), Nitrogen-14 nuclear magnetic resonance spectroscopy as a probe of lipid bilayer headgroup structure.

55. R. Kinsey, A. Kintanar, M. D. Tsai, R. Smith, N. Janes and E. Oldfield, J. Biol. Chem., 256, 4146-4149 (1981), First observation of amino acid side chain dynamics in membrane proteins using high field deuterium nuclear magnetic resonance spectroscopy.

56. S. Schramm and E. Oldfield, Biochemistry, 22, 2908-2913 (1983), Nuclear magnetic resonance studies of amino-acids and proteins. Rotational correlation times of proteins by deuterium nuclear magnetic resonance spectroscopy.

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65. M. A. Keniry, T. M. Rothgeb, R. L. Smith, H. S. Gutowsky and E. Oldfield, Biochemistry, 22, 1917-1926 (1983), NMR studies of amino-acids and proteins. Sidechain mobility of methionine in the crystalline amino acid and in crystalline sperm whale (*Physeter catodon*) myoglobin.

66. R. W. K. Lee and E. Oldfield, J. Biol. Chem., 257, 5023-5029 (1982), Nuclear magnetic resonance of hemeprotein crystals. Structure of the heme in *Physeter catodon* ferrimyoglobin and an analysis of hyperfine shifts.

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relaxation of deuteriomethyl-labelled amino-acids in crystals and in *Halobacterium halobium* and *Escherichia coli* cell membranes.

69. S. Ganapathy, S. Schramm and E. Oldfield, J. Chem. Phys., 77, 4360-4365 (1982). Variable-angle sample-spinning high-resolution NMR of solids.

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71. E. Oldfield, R. A. Kinsey, K. A. Smith, J. A. Nichols, R. J. Kirkpatrick, J. Mag. Res., 51, 325-329 (1983). High-resolution NMR of inorganic solids. Influence of magnetic centers on magic-angle sample-spinning lineshapes in some natural aluminosilicates.

72. S. Schramm, R. J. Kirkpatrick and E. Oldfield, J. Am. Chem. Soc., 105, 2483-2485 (1983). Observation of high-resolution oxygen-17 NMR spectra of inorganic solids.

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Patents and Other Work Supported by E. Oldfield Grants

1. C. T. G. Knight, Zeolites, 9, 448-450 (1989). High-field silicon-29 nuclear magnetic resonance spectroscopic studies of dilute methanolic tetramethylammonium silicate solutions.

2. C. T. G. Knight, J. Non-Cryst. Solids, 104, 151-152 (1988). On ^{29}Si scalar couplings and spin-lattice relaxation times in ^{29}Si NMR spectroscopic studies of the hydrolysis of tetramethoxysilane.

3. C. T. G. Knight, J. Chem. Soc. Dalton Trans., 1457-1460 (1988). A two-dimensional silicon-29 nuclear magnetic resonance spectroscopic study of the structure of the silicate anions present in an aqueous potassium silicate solution.

4. H. G. Jang, S. J. Geib, Y. Kaneko, M. Nakano, M. Sorai, A. L. Rheingold, B. Montez and D. N. Hendrickson, J. Am. Chem. Soc. 111, 173-186 (1989). Lattice-engineered micromodulation of intramolecular electron-transfer rates in trinuclear mixed-valence iron acetate complexes.

5. J. D. Augspurger and C. E. Dykstra, Mol. Phys., 80, 117-126 (1993). Isotropic and anisotropic proton chemical shielding surface of water.

6. J. D. Augspurger and C. E. Dykstra, J. Am. Chem. Soc. 115, 12016-12019 (1993). Correlation of fluorine-19 chemical shielding and chemical shift nonequivalence.

7. J. D. Augspurger and C. E. Dykstra, J. Chem. Phys. 99, 1828-1836 (1993). Derivative Hartree-Fock approach to molecular Sternheimer shielding. Calculation of intermolecular influence on nuclear quadrupole coupling.

8. M. Parniak, J. W. Mellors, E. Oldfield, Z. Tovian and J. M. W. Chan, US Patent Application P35891 072396.0254, Filed September 9, 2004. Antiviral drug compositions and methods in the treatment of NRTI-resistant retroviral diseases.

9. J. M. Sanders, Y. Song, J. M. W. Chan and E. Oldfield, United States Patent 7,358,361. Bisphosphonate compounds and methods for the treatment of bone resorption diseases, cancer, and infectious diseases.

10. E. Oldfield, Y. Song, Y. Zhang and J. M. Sanders, US Patent 7,687,482. Bisphosphonate compounds and methods.

11. J. M. Sanders, Y. Song, J. M. W. Chan, E. Oldfield and Y. Zhang, United State Patent 7,745,422; Bisphosphonate compounds and methods for bone resorption diseases, cancer, bone pain, immune disorders, and infectious diseases.

12. E. Oldfield and Y. Zhang, United States Patent Application 20080255070, October 16, 2008; Bisphosphonate compounds and methods with enhanced potency for multiple targets including FPPS, GGPPS, and DPPS.

13. E. Oldfield and Y. Song, United States Provisional Patent Application No. 61/146,864; Anti-bacterial compositions and methods that target virulence factors of *Staphylococcus aureus*.

14. V. Nizet, G.Y. Liu, E. Oldfield and Y. Song, United States Patent, 8,148,352; Antimicrobial therapy for bacterial infections.

15. E. Oldfield, K. Wang, W. Wang and Y. Zhang, United States Patent 8,609,638; Enzyme inhibiting compounds and methods.

16. V. Nizet, G. Liu. E. Oldfield and Y. Song, United States Patent 8,778,913; Antimicrobial therapy for bacterial infections.

Invited Lectures

1. University of Illinois at Urbana, Chemistry Department, 4/73.
2. University of Maryland, Chemistry Department, 5/74.
3. University of Texas, Southwestern Medical School, Biophysics Department, 5/74.
4. SUNY at Stony Brook, Medical School, Pharmacology Department, 4/75.
5. Michigan State University, Chemistry Department, 4/75.
6. University of Kansas, Chemistry Department, 4/75.
7. University of Illinois at Urbana, Chemistry Department, 4/75.
8. University of Texas at Austin, Biochemistry Division, 5/75.
9. Rice University, Biochemistry Department, 5/75.

10. SUNY at Buffalo, Molecular Biology Division, 5/75.
11. University of Idaho, Chemistry Department, 5/75.
12. University of Notre Dame, NMR Symposium, 9/76.
13. University of Missouri, Biophysics Symposium, 5/77.
14. University of Illinois, Midwest NMR Meeting, 11/77.
15. Biophysical Society, Washington, 3/78.
16. University of Illinois, Physics Department, 3/78.
17. Butler University, American Chemical Society, 5/78.
18. University of Alabama, Cancer Center, 7/78.
19. M.I.T., National Magnet Laboratory, 11/78.
20. Amoco Oil, NMR Symposium, 11/78.
21. SUNY at Albany, Chemistry Department, 11/78.
22. University of Illinois, Chemistry Department, 11/78.
23. Experimental NMR Conference, Asilomar, 2/79.
24. Eastern Regional Research Laboratory, Pennsylvania, 3/79.
25. Procter & Gamble, Cincinnati, Current Awareness Seminars, 5/79.
26. American Chemical Society, Rockford, Membranes Symposium, 5/79.
27. Gordon Conference on Magnetic Resonance, New Hampshire, 6/79.
28. Rocky Mountain Conference, NMR of Macromolecules, Denver, 7/79.
29. Meldola Medal Lecture, Lancaster (U.K.), 9/79.
30. Purdue University, Interdepartmental Seminar, 10/79.
31. Symposium on NMR of O_2 Transport Proteins, Airlie, Virginia, 4/80.
32. University of South Carolina, The Graduate Society Lectures, 5/80.
33. Gordon Conference on Biopolymers, New Hampshire, 6/80.
34. Yale University, Interdepartmental Seminar, 10/80.
35. California Institute of Technology, NMR Symposium, 10/80.
36. Louis Katz Award Lecture, American Heart Association, 11/80.
37. Biochemical Society Symposium Lecture, London, 12/80.
38. University of California, Davis, Biophysics Group Seminar, 1/81.
39. Bay Area Membrane Group Seminar, San Francisco, 1/81.
40. The Hormel Institute, University of Minnesota, 3/81.
41. 2nd SUNYA Conference on Molecular Structure, Albany, 4/81.
42. Experimental NMR Conference, Asilomar, California, 4/81.
43. University of Virginia, Department of Biochemistry, 5/81.
44. Gordon Conference on Magnetic Resonance, New Hampshire, 6/81.
45. Gordon Conference on Protein Structure, New Hampshire, 6/81.
46. Radiation Research Society, Minneapolis, 6/81.
47. Gordon Conference on Micellar and Macromolecular Catalysis, New Hampshire, 7/81.
48. ACS Southeastern Regional Meeting, Membranes Symposium, Kentucky, 11/81.
49. University of Minnesota, Department of Biochemistry, 9/81.
50. E. I. DuPont de Nemours, Central Research, Delaware, 10/81.
51. Mobil, Central Research, New Jersey, 12/81.
52. Johns Hopkins University, Medical School, 4/82.
53. Experimental NMR Conference, Wisconsin, 4/82.
54. SIU Conference, Carbondale, 10/82.
55. University of Chicago, Chemistry Department, 1/83.
56. ACS Regional Meeting (NMR Symposium), Cincinnati, 5/83.
57. 8th International Society for Magnetic Resonance, Chicago, 8/83.
58. The ACS Pure Chemistry Award Lecture, Philadelphia, 8/84.
59. The Colworth Medal Lecture, Sharnbrook, 10/84.
60. Mobil R & D Corporation, Paulsboro, 10/84.
61. University of Illinois, High School Teachers' Chemistry Symposium, 4/85.
62. Distinguished Lecturer, Indiana University, Bloomington, 4/85.
63. 21st Colworth Medal Lecture, Oxford, U.K., 7/85.

64. The Mobay Lecture, University of New Hampshire, 4/86.
65. Engelhard Corporation, Edison, N.J., 4/86.
66. Michigan State University, Chemistry Department, 5/86.
67. Federation of Analytical Chemistry and Spectroscopy Societies, St. Louis, 9/86.
68. Eastern Analytical Symposium, Inc., New York, 10/86.
69. Fall Symposium, Northwestern University, Chemistry Department, 10/86.
70. Research Scholar Lecture Series, Drew University, 11/86.
71. Delaware NMR Symposium, University of Delaware, 6/87.
72. Department of Chemistry, University of Illinois at Urbana-Champaign, Urbana, IL, 9/87.
73. Shell Research and Development Corporation, Houston, TX, 11/87.
74. Lever Brothers, Edgeware, NJ, 3/88.
75. High T_c Superconductor Workshop, University of Illinois, Urbana, IL, 4/88.
76. Magnetic Resonance in Biology and Medicine Seminar, University of Illinois, Urbana, IL, 4/88.
77. XIIIth International Conference on Magnetic Resonance in Biological Systems, Madison, WI, 8/88.
78. Federation of Analytical Chemistry and Spectroscopy Societies, New York, NY, 10/88.
79. Solid State NMR Symposium (John Waugh's 60th Birthday), MIT, Cambridge, MA, 1/89.
80. Student Seminar, DePauw University, Greencastle, IN, 11/89.
81. Rocky Mountain Conference, Denver, CO, 8/90.
82. Chemistry Department, University of Illinois at Urbana-Champaign, Urbana, IL, 9/90.
83. ACS Southeastern-Southwestern Regional Meeting, Solid-State NMR Symposium, New Orleans, LA, 12/90.
84. Biochemical Society, Membranes Symposium, London, England, 12/91.
85. Pittsburgh Conference, New Orleans, LA, H. S. Gutowsky Pittsburgh Award, NMR Symposium, 3/92.
86. NATO ARW on Chemical Shielding, College Park, MD, 7/92.
87. Departmental Colloquium, University of Illinois at Urbana-Champaign, IL, 10/92.
88. Department of Chemistry, Indiana University-Purdue University at Indianapolis, IN, 1/93.
89. American Chemical Society, NMR Calculations Symposium, Denver, CO, 3/93.
90. Pfizer, Central Research, Research Seminar, Groton, CT 5/93.
91. American Chemical Society, NMR/Theory Symposium, Chicago, IL, 8/93.
92. American Chemical Society, NMR of Group Six Elements Symposium, Washington, DC, 8/94.
93. American Chemical Society, Spectroscopic Studies of Polymer Structure Symposium, Washington, DC, 8/94.
94. Rocky Mountain Conference on Analytical Chemistry, Biological NMR Symposium, Denver, CO, 8/94.
95. XVI International Conference on Magnetic Resonance in Biological Systems, Veldhoven, The Netherlands, 8/94.
96. Chemistry Department, University of Illinois at Urbana-Champaign, Urbana, IL, 8/94.
97. Protein Engineering Network of Centers of Excellence, University of Alberta, Edmonton, Alberta, Canada, 9/94.
98. Biomembranes in Health and Disease, Chapman/Lucy Symposium, Royal Free Hospital, London, UK, 10/94.
99. 25th Midwest Area NMR Discussion Group Meeting, Purdue University, West Lafayette, IN, 11/94
100. Colworth Medal 30th Anniversary Symposium, The Biochemical Society, Brighton, UK, 12/94.
101. 35th Experimental NMR Conference, Boston, MA, 3/95.
102. First Annual Yale NMR Symposium, New Haven, CT, 3/95.
103. National Institute for Medical Research, Mill Hill, London, UK, 6/95.

104. Gordon Conference on Magnetic Resonance, Wolfeboro, NH, 7/95.
105. 12th International Conference on Magnetic Resonance (Royal Society of Chemistry) Plenary Lecture, Manchester, UK, 7/95.
106. Chemistry Department, Indiana University, Bloomington, IN, 9/95.
107. Chemistry Department, University of Michigan, Ann Arbor, MI, 11/95.
108. Department of Molecular and Cell Biology, Structural Biology Seminar, University of California at Berkeley, 6/96.
109. XVIIth International Conference on Magnetic Resonance in Biological Systems, Keystone, CO, 8/96.
110. Frontiers of NMR in Molecular Biology, 1997 Keystone Symposia, Taos, NM, 2/97.
111. Department of Chemistry, Massachusetts Institute of Technology, Cambridge, MA, 4/97.
112. Francis Bitter Magnet Laboratory, Magnetic Resonance Lecture Series, Cambridge, MA, 4/97.
113. N. L. Allinger Symposium, University of Georgia, Athens, GA, 6/97.
114. Workshop on Biological Solid-State NMR, University of Pennsylvania, Philadelphia, PA, 5/97.
115. High-Field NMR: A New Millenium Resource, Washington, DC, 1/98.
116. 39th Experimental NMR Conference, Asilomar, CA, 3/98.
117. American Chemical Society, Computation of NMR Chemical Shifts Symposium, Boston, MA, 8/98.
118. French-German NMR Society Seminar, Strasbourg, 5/98.
119. Chemistry Department, University of Illinois at Urbana-Champaign, Urbana, IL, 9/98.
120. American Chemical Society, Fuel Cell Catalysis/Surfaces/Electrochemistry Symposium, Anaheim, CA, 3/99.
121. American Chemical Society, Metalloporphyrins Colloquium, Anaheim, CA, 3/99.
122. Royal Society of Chemistry, NMR Symposium, Edinburgh, Scotland, 7/99.
123. Physical Chemistry Seminar, Chemistry Department, University of Illinois at Urbana-Champaign, Urbana, IL, 9/99.
124. Chemical Biology Seminar, Chemistry Department, University of Illinois at Urbana-Champaign, Urbana, IL, 10/99.
125. Southeastern Magnetic Resonance Symposium, Florida State University, Tallahassee, FL, 11/99.
126. Department of Chemistry, Columbia University, New York, NY, 2/00.
127. 41st Experimental NMR Conference, Asilomar, CA, 4/00.
128. Rocky Mountain Conference, Denver, CO, 8/00.
129. Physical Chemistry Seminar, Chemistry Department, University of Illinois at Urbana-Champaign, Urbana, IL, 9/00.
130. Moses Gomberg Lecture, University of Michigan, Ann Arbor, MI, 9/00.
131. Department of Chemistry, University of Nebraska, NE, 9/00.
132. CECAM Conference on Molecular Modeling, Lyon, France, 10/00.
133. Dennis Chapman Memorial Symposium, Royal Free Hospital, London, UK, 10/00.
134. Lecture Series, Graduate School, University of Stuttgart, Germany, 10/00.
135. American Chemical Society, Medicinal Chemistry, Chicago, IL, 8/01.
136. Chemistry Department, Iowa State University, Ames, IA, 11/01.
137. Chemistry Department, Vanderbilt University, Nashville, TN, 11/01.
138. Chemistry Department, Indiana University, Bloomington, IN, 1/02
139. Keystone Conference, Drugs Against Tropical Protozoan Parasites, Keystone, CO, 3/02
140. Stanford Chemistry Student Hosted Colloquium, Palo Alto, CA, 4/02.
141. 16th European Experimental NMR Conference, Prague, Czech Republic, 06/02.
142. Research Seminar, Innate Pharma, Marseilles, France, 06/02.
143. 5th COST B9 Congress: Antiprotozoal Chemotherapy, London, UK, 06/02.
144. Biochemistry Seminar, University of Illinois at Urbana-Champaign, Urbana, IL, 10/02.
145. Chemistry Department Seminar, Indiana State University, Terre Haute, IN, 10/02.
146. Chemistry Department, New York University, New York, 11/02.

147. Chemistry Department, University of California, Riverside, CA, 11/03.
148. Gordon Research Conference on Computational Aspects of Biomolecular NMR, Ventura, CA, 1/04.
149. 36th ACS Central Regional Meeting, Indianapolis, IN, 6/04.
150. 46th Experimental NMR Conference, Providence, RI, 4/05.
151. 10th Annual Stanley Conference on Toxoplasmosis and Schizophrenia, Annapolis, MD, 11/05.
152. Gordon Research Conference on Metals in Biology, Ventura, CA, 2/06.
153. γδ T Cell Conference, The Salk Institute, La Jolla, CA, 4/06.
154. Chemical Biology Seminar, Chemistry Department, University of Illinois at Urbana-Champaign, Urbana IL, 9/06.
155. Center for Tropical and Emerging Global Diseases, University of Georgia, Athens, GA, 9/06.
156. American Chemical Society, Symposium on Bisphosphonates, Covington, KY, 5/07.
157. Oxford University, Structural Genomics Consortium Lecture, Botnar Research Center, Oxford, UK, 6/07.
158. Peter Pulay Conference on Quantum Chemistry, Budapest, Hungary, 6/07.
159. American Chemical Society, Computers in Chemistry/Drug Discovery, Boston, MA, 8/07.
160. Paul Lauterbur Symposium, Beckman Institute, University of Illinois, Urbana, IL, 3/08.
161. Chemistry Department Seminar, Wabash College, Crawfordsville, IN, 9/08.
162. Novartis Institutes for Biomedical Research, Boston, MA, 12/08.
163. Chemistry Department, University of Manchester, UK (RSC Tour), 11/09.
164. RSC Award in Soft Matter and Biophysical Chemistry, Cardiff University, Cardiff, UK, 11/09.
165. Chemistry Department, Newcastle University, Newcastle, UK (RSC Tour), 11/09.
166. Department of Chemistry, University of Pennsylvania, Pennsylvania, PA, 2/10.
167. Biophysical Society, New Chemical Modulators Symposium, San Francisco, 2/10.
168. American Chemical Society, Metallo-proteins Symposium, San Francisco, 3/10.
169. Gordon Conference on Fe-S Proteins, Colby-Sawyer Academy, New London, CT, 6/10.
170. Chemistry Department, Stevens Institute of Technology, Hoboken, NJ, 10/10.
171. Biophysical Society 2011 Avanti Award in Lipids, Baltimore, MD, 3/11.
172. Center for Excellence in Nano-medicine, University of California, San Diego, CA, 05/11.
173. American Chemical Society, 243rd National Meeting, Breakthroughs in Biological Chemistry, San Diego, CA, 03/12.
174. Department of Pharmacology, Baylor College of Medicine, Houston, TX, 04/12.
175. Department of Biophysics, University of Michigan, Ann Arbor, MI, 10/12.
176. The Bernard Belleau Lecture, McGill University, Montreal, Canada, 11/12.
177. American Chemical Society, 246th National Meeting, Division of Medicinal Chemistry, Indianapolis, IN, 09/13.
178. American Chemical Society, 246th National Meeting, Division of Inorganic Chemistry, Indianapolis, IN, 09/13.
179. Chemistry Department, University of Illinois at Urbana-Champaign, Urbana, IL, 9/13.
180. Chemistry Department, University of Chicago, Chicago, IL, 11/13.
181. Chemistry Department, Georgetown University, Washington, DC, 11/13.
182. Chemistry Department, University of Kentucky, Lexington, KY, 4/14.
183. Chemical and Biological Engineering, Biotech Training Program, Northwestern University, Chicago IL, 05/15.
184. Washington University Medical School, Department of Biochemistry and Molecular Biophysics, St. Louis MO, 03/17.

Ph.D. Students

1. M. D. Meadows, Interaction of cholesterol and proteolipid apoprotein with model lipid bilayers. A deuterium magnetic resonance study, 1979. (Eastman-Kodak)
2. D. Rice, The nuclear magnetic resonance study of lipid protein interactions in model membrane systems, 1980. (Varian Associates, Palo Alto)
3. R. Skarjune, A deuterium nuclear magnetic resonance study of phospholipid and glycosphingolipid headgroup structure, 1980. (3M)
4. R. Kinsey, Solid state NMR of quadrupolar nuclei, 1984. (B. F. Goodrich)
5. Professor A. Kintanar, A deuterium nuclear magnetic resonance study of protein dynamics and protein-lipid interactions in model and biological membranes, 1984. (University of New Mexico)
6. K. Smith, High-resolution solid-state silicon-29 nuclear magnetic resonance studies of minerals and glasses, 1984. (University of New Mexico).
7. R. L. Smith, A deuterium nuclear magnetic resonance study of amino acid dynamics in the membrane protein bacteriorhodopsin, 1984. (Rohm & Haas)
8. S. Schramm, High-resolution multinuclear magnetic resonance of inorganic solids. Oxygen-17 nuclear magnetic resonance studies of inorganic oxides, oxyanions, and silicates, 1984.
9. Professor N. Janes, Nuclear magnetic resonance studies of catalysts and model catalytic systems: biochemical and inorganic applications, 1985. (Thomas Jefferson University)
10. H. K. Timken, Solid-state nuclear magnetic resonance studies of quadrupolar nuclei in inorganic systems, 1987. (Chevron Research, San Francisco)
11. A. Thompson, Multinuclear nuclear magnetic resonance studies of model inorganic systems, 1987. (United States Department of Agriculture)
12. Professor H. C. Lee, Multinuclear NMR studies of hemeproteins and their model compounds, 1988. (Pohan University)
13. J. Bowers, Nuclear magnetic resonance studies of model and biological membranes, 1988. (SRA, DRG, National Institutes of Health)
14. T. Walter, Multinuclear solid-state NMR studies of supported transition metal carbonyls, 1988. (Waters Associates)
15. J. Forbes, The application of "magic angle" sample spinning NMR to the study of liquid crystals and membranes, 1988. (National Institutes of Health, Bethesda, MD)
16. O. H. Han, Solid-state nuclear magnetic resonance spectroscopic studies of quadrupolar nuclei in inorganic systems and determination of optical parameters in optical waveguides, 1989. (Korea Basic Science Institute)
17. C. Coretsopoulos, Oxygen-17 nuclear magnetic resonance studies of high temperature superconductors, 1989. (University of Iowa)
18. X. Shan, High resolution nuclear magnetic resonance studies of lipids and model membranes, 1990. (University of Guelph, Canada)
19. Professor L. Reven, ^{17}O NMR relaxation studies of oxide superconductors, 1990. (McGill University)
20. K. D. Park, Multinuclear NMR studies of zeolites and heme-proteins, 1991. (Daelim Industrial Co. Ltd., South Korea)
21. C. Husted, ^{13}C magic angle spinning NMR studies of myelin membranes, 1991. (University of California, Santa Barbara)
22. J. Chung, Proton-coupled carbon-13 sample spinning NMR studies of macromolecules and ordered systems, 1991. (Scripps Research Institute, La Jolla, CA)
23. S. Yang, Solid state NMR studies of oxide superconductors and related materials, 1991. (Monsanto, St. Louis)
24. Professor J. Shore, ^{17}O and ^{135,137}Ba NMR study of oxide superconductors, 1992. (South Dakota State University)
25. H. Le, Multinuclear magnetic resonance studies of proteins, 1995 (Human Frontiers Fellow, ETH-Zurich, 1996-1998; University of Illinois)
26. James B. Day (joint with A. Wieckowski), Magnetic resonance at electrified interfaces: study of carbon monoxide on platinum, 1997. (University of Illinois - Medical School)

27. Jianjun Wu (joint with A. Wieckowski), NMR as a probe for molecular adsorption on metal surfaces in electrochemical environments and at electrified interfaces, 1996. (University of Iowa)
28. Professor M. McMahon, An NMR spectroscopy and density functional theory study of organometallic complexes and heme proteins with carbonyl, alkylisocyanide, nitrosoarene and olefin ligands: applications to structure determinations, 1999 (Johns Hopkins University)
29. W.D. Arnold, What do J-couplings (trans-hydrogen bond and through-space) reveal about the chemical nature of hydrogen bonding in proteins?, 2000 (UCSF, CA)
30. L. K. Sanders, Theoretical and experimental investigations of chemical shielding in amino-acids, proteins and model compounds (University of Illinois)
31. M. Martin, New Chemotherapeutic Approaches for the treatment of parasitic protozoan diseases (Arenapharm, San Diego, CA)
32. C. Szabo, Rational design of chemotherapeutic agents by quantitative structure-activity relationships and solution NMR methods for high resolution protein structure refinement (Baxter Laboratories, Chicago, IL)
33. Benjamin Moreno, ^{31}P NMR spectroscopy of parasitic protozoa. (University of Illinois – M.D. Program)
34. Junhong Mao, NMR, crystallographic and quantum chemical studies of metalloproteins and bisphosphonate inhibitors. (Colgate Palmolive, NJ)
35. Haihong Sun, Quantum chemical studies of proteins and model systems.
36. John Sanders, An improved understanding of bisphosphonates through computational techniques. (Merck & Co., Molecular Systems)
37. Evangelia Kotsikorou, Developing new chemotherapeutic agents against bone resorption and parasitic diseases through computer-aided drug design (UNC).
38. Annette Leon, Isoprenoid biosynthesis pathway as a drug target for bisphosphonates: Transcriptional profile investigation (Harvard Medical School)
39. Fenglin Yin, Enzymes as drug targets in isoprenoid biosynthesis pathway: structure, mechanism and inhibition (Coskata, Chicago, IL)
40. Michael Hudock, Elucidating targets for infectious diseases and cancer: A computational approach (Princeton University; Met Life, NYC)
41. C. S. Dushyant Mukkamala Venkata, NMR, crystallographic and computational investigations of peptides, proteins and bisphosphonates: New paradigms for rational drug design (Wolfram Research)
42. Rong Cao, Experimental and computational study of bisphosphonates targeting isoprenoid biosynthesis pathway.
43. Fu-Yang (Albert) Lin, Crystallographic studies of prenyltransferases (Harvard Medical School).
44. Weixue Wang, Structure, function and inhibition of IspG and IspH (Massachusetts Institute of Technology; Janssen Pharmaceuticals)
45. Yi-Liang Liu, Structure, function and inhibition of GcpE, FPPS and GGPPS: Targeting isoprenoid biosynthesis for drug discovery (University of Illinois; UCSF)
46. Jikun Li, Mechanism, inhibition and spectroscopy of isoprenoid biosynthesis enzymes (University of Illinois; Carnegie-Mellon University).
47. Wei Zhu, Targeting isoprenoid biosynthesis for drug discovery (University of Illinois).
48. Guodong Rao, Spectroscopic studies of Fe and Cu-containing proteins (UC Davis).
49. Xinxin Feng, Anti-infective drug leads (University of Illinois; Hunan University).

Postdoctorals

1. S. Kang (Beijing)
2. S. Rajan (Novartis, Boston, MA)
3. R. Jacobs (Caltech, Beckman Institute)
4. Professor I. Baianu (University of Illinois)

5. T. Rothgeb (Procter & Gamble)
6. S. Ganapathy (National Chemical Laboratory, India)
7. R. Ramachandran (Jena)
8. A. Kunwar (Hyderabad)
9. S. Hayashi (N.C.L.I., Japan)
10. T. Son (University of Paris, France)
11. Professor M. D. Tsai (Ohio State University)
12. C. Knight (University of Illinois)
13. S. Shinoda (University of Tokyo, Japan)
14. G. Turner (President, Spectral Data Services, Inc., Champaign)
15. R. Lee (Caltech)
16. M. Keniry (CSIRO)
17. F. Adebodun (University of Texas)
18. Professor K. Guo (Soochow University, Taiwan)
19. Professor J. Urbina (IVIC, Caracas)
20. Bor-Ren Fang (Industrial Technology Research Institute, Taiwan)
21. Professor A. C. de Dios (Georgetown University, Washington, DC)
22. H. Le (University of Illinois, Imaging/MRS Center)
23. J. Pearson (John Hopkins Medical School)
24. S. Vierkotter (QM Corporation, San Diego, CA)
25. R. Salzmann (Mibelle AG Cosmetics, Switzerland)
26. Y. Ruiz-Morales (University of Mexico City)
27. Ellen Chien (San Diego)
28. Professor M. McMahon (Johns Hopkins University, MD)
29. W. A. Arnold (UCSF, San Francisco, CA)
30. Professor Y. Tong (Georgetown University, Washington, DC)
31. C. Szabo (Baxter Laboratories, Chicago, IL)
32. Professor F. Cheng (University of South Florida, Tampa, FL)
33. H. Imai (NEC Corporation, Tokyo, Japan)
34. Professor Gary Meints (Southwest Missouri State University)
35. Takeshi Kobayashi (Colorado State University, CO)
36. Professor Yong Zhang (Stevens Institute of Technology, NJ)
37. Professor Yongcheng Song (Baylor College of Medicine, Houston, TX)
38. Professor P.K. Babu (Western Illinois University, Macomb, IL)
39. Professor Yonghui Zhang (Tsinghua University, Beijing, PRC)
40. Yi-Liang Liu (UCSF, CA)
41. Jikun Li, (Carnegie-Mellon University, PA).
42. Kai Li (Visterra Inc., MA)
43. Ke Wang (Memorial Sloan Kettering Cancer Center, NY).
44. Sandhya Bansal (Dignity Health, Phoenix, AZ).
45. Professor Xinxin Feng (Hunan University, PRC).

Undergraduates

1. Rick Ellis, Construction of NMR instrumentation.
2. Gary L. Turner, ^{13}C NMR of lactalbumin and lactoglobulin; isolation of milk proteins, deuterium NMR of local anesthetic-membrane interactions.
3. Perry Gilbert, Synthesis of deuterium-labeled cholesterols.
4. Ross Simpson, Computer graphics; programming; analysis of protein NMR chemical shifts.
5. Samuel Trotter, Synthesis of deuterium-labeled fatty acids for phospholipid synthesis.
6. Tim Brouder, Synthesis of deuterium-labeled cerebrosides for membrane structure studies.
7. Alan Cohen, Synthesis of a C_8-side-chain ^{2}H-labeled cholesterol.

8. James Gossage, Synthesis of deuterium-labeled cerebrosides.
9. William Ochs, Synthesis of deuterium-labeled cerebrosides.
10. Andrew Scheinman, Construction of digital and radio-frequency electronics instrumentation; computer interfacing; isolation of Ca(2+)-Mg(2+) ATPase from sarcoplasmic reticulum.
11. Brian Albert, Synthesis of deuterium-labeled cytochrome c.
12. S. Lasker, Synthesis of deuterium-labeled cerebrosides.
13. Larry Pubentz, Synthesis of deuterium-labeled amino acids using diethylacetamidomalonate.
14. Professor Tane Ray, Construction of digital and radio-frequency electronics instrumentation; computer interfacing; preparation of ^{19}F-labeled cell membranes.
15. Vicki Rosenquist, Isolation and ^{2}H-labeling of myoglobins from Gallus domesticus and Sus domesticus.
16. Scott Wallenberg, Isolation of myoglobins from Gallus domesticus and Sus domesticus.
17. Brenda Coles, Growth of bacterial cells; membrane isolation; synthesis of deuterium-labeled amino acids.
18. Cathy Flynn, Growth of bacterial cells, especially thermophilic and halophilic bacteria.
19. Julie Nichols, Preparation of deuterium-labeled amino acids, proteins and cell membranes.
20. J. Scheiber, Synthesis of ^{13}C-labeled histidine.
21. John Sloan, Growth and isolation of deuterium-labeled Acholeplasma laidlawii cell membranes.
22. Joe Vandenbranden, Preparation of deuterium-labeled proteins and cell membranes.
23. Kolby Harris Glab, Preparation of ^{17}O labeled amino-acids for solid-state NMR.
24. Steven Thomas, Synthesis of oxygen-17 labeled amino-acids for solid-state NMR.
25. Lorraine Yu, Syntheses of ^{2}H-labeled diphenylhexatrienes; growth of labeled H. halobium.
26. Vicki Jacob, Computer programming for NMR.
27. Joe Yoon, Synthesis of ^{17}O-labeled oxides.
28. Sonu Chong, Synthesis and ^{17}O NMR of labeled oxides and oxyanions; ^{17}O NMR of mixed oxide phases.
29. William Shrader, Approaches to and factors controlling the incorporation of ^{57}Fe and ^{17}O into meso-tetra(α,α,α,α-o-pivalamidophenyl)porphyrin complexes.
30. Liam Moran, Magic angle sample spinning ^{13}C nuclear magnetic resonance spectroscopy of myelins.
31. Jeffrey Nordin, Growth and isolation of isotopically labeled purple membranes.
32. Peter Kolodziej, Synthesis of labeled amino-acids, purple membranes and bismuth and indium inorganic complexes.
33. Matthew Hill, Isolation of normal and abnormal myelin membranes for solid state NMR.
34. Linda Chi, Studies of thermolysin and alkaline phosphatase for zinc NMR.
35. Edward Blumenthal, Synthesis of ^{2}H-labeled amino-acids for solid-state NMR.
36. Steve Colis, NMR of purple membranes.
37. Martin Goliak, Growth and isolation of lysozyme from Aspergillus niger.
38. Greg Sponsky, Lipid protein interactions between cytochrome c oxidase and phospholipids.
39. Brenda Cole, Synthesis of deuterated amino-acids for NMR.
40. Todd Duncan, Synthesis, characterization, and ^{17}O-NMR of ^{17}O-labeled high-T_c superconductors.
41. Shannon Harrell, Preparation and purification of ^{19}F-labeled lysozymes for NMR.
42. Jessica Patterson, Production and ^{19}F NMR of lysozymes and ^{13}C/^{2}H NMR studies of lipids and their interactions with sterols.
43. Amy Husted, NMR of myelin membranes.
44. Michaela Evangelista, ^{13}C magic angle spinning of myeling membranes; data analysis.
45. Chantri Trinh, Synthesis of ^{13}C, ^{2}H-labeled FMOC amino-acids for gramicidin synthesis.

46. Shing-Yu Wang, Construction of a 600 MHz NMR console.
47. Robert Mitchell, Preparation/isolation of ^{13}C-labeled bacteriorhodopsin for NMR studies.
48. Michael Yu, GC-MS and NMR of labeled bacteriorhodopsin.
49. David Laws, NMR of lysozyme; ab initio calculation of NMR chemical shifts in proteins; NMR of membranes; synthesis of an universal (H, C, N, Si) NMR chemical shift standard.
50. Robert Havlin; ab initio studies of protein structure refinement; NMR of organometallics (NIH).
51. Mark Wojdelski, synthesis of ^{13}C, ^{15}N-labeled isocyanides; solution and solid-state NMR of heme proteins (NSF Fellow, Harvard; declined).
52. Cameron Wicklow, Synthesis of metal-isonitrile complexes.
53. Jesse Miller, Construction of NMR instrumentation (UIUC – Staff).
54. Andrew Hejl, Synthesis of labeled metalloporphyrins.
55. Gregg Gargano, Synthesis of novel organometallic anti-leukemia drugs.
56. Paras Mehta, Synthesis of bisphosphonates anti-parasitic agents.
57. Joshua Grimley, Synthesis of bisphosphonates as anti-parasitic agents (Stanford).
58. John Cieslak, Synthesis of bisphosphonates as anti-parasitic agents (Northwestern Medical School).
59. Jared Lewis, Synthesis of bisphosphonates as anti-parasitic agents (Asst. Prof. – U. Chicago).
60. Matt Clutter, Synthesis of bisphosphonates as anti-parasitic agents (Stanford, Immunology).
61. An-Phong Le, Synthesis of bisphosphonates as anti-parasitic agents (UIUC).
62. Sam Jennings, Synthesis of bisphosphonates as anti-parasitic agents (Tufts – Veterinary Medicine).
63. Alison Colantino, Synthesis of bisphosphonates as anti-parasitic agents (Cornell University Medical School).
64. Tim Loftus, Synthesis of bisphosphonates as anti-parasitic agents (Washington University Medical School MD; Reuters).
65. Erin Van Brussel, Synthesis of bisphosphonates as anti-parasitic agents (Mayo Clinic/ Stanford residency).
66. Katie Siegel, Synthesis of aminomethylene bisphosphonates and related systems (US EPA).
67. Theresa Koys, Development of novel delivery systems for bisphosphonates.
68. Julian M. W. Chan, Synthesis of pyrophosphates and bisphosphonate inhibitors (MIT).
69. Tom Kosztowski, Synthesis of novel bisphosphonates (Johns Hopkins School of Medicine).
70. Sarah Odeh, Synthesis and testing of novel bisphosphonates; preparation of labeled proteins for NMR spectroscopy (University of Illinois Medical School, Chicago).
71. Christa Haase, Synthesis of novel anti-cancer bisphosphonates (ETH, Zurich).
72. Suleyman Er (Bilkent University), Quantum chemical studies of hyperfine shifts (University of Twente).
73. Umit Akbey (Bilkent University), Synthesis and solid-state NMR of Cu(II) amino-acid complexes.
74. Pavan Srinath (IIT, Madras), Inhibition of farnesyl diphosphate by bisphosphonate anti-infectives.
75. Erin Broderick, Synthesis of diphosphate and bisphosphonate phosphoantigens (UCLA, Chemistry).
76. Christine Schwerdtfeger, Quantum chemical studies of bisphosphonates (University of Chicago, Chemistry).
77. Zhebo Chen, Drug delivery systems for bisphosphonates (Stanford, Chemical/Biomolecular Engineering.
78. Martin Kosztowski, Biological screening of novel bisphosphonates (UIC-Medical School).

79. Amanda Goddard, Farnesyl diphosphate synthase: expression, purification and inhibition by bisphosphonates (Amoco).
80. Kilannin Krysiak, Screening novel bisphosphonates in tumor cell lines (Washington University Medical School, PhD program in cancer biology).
81. Ting-Kai Chang, Synthesis of anti-cancer agents (MIT, Chemistry).
82. Jordan Axelson, Synthesis and testing of new drug leads (UC Berkeley).
83. Lauren Cass
84. Anup Kumar
85. Anna Kosztowski
86. Amit Tailer
87. Jason Draper
88. Shiou-chi Chang
89. Kevin Houlihan (UNC, Chapel Hill, NC)
90. Shirani Amin
91. Nicholas Pomito
92. Sonom Jaglan
93. Jin Young Yoo
94. Anna Sankovsky, UPPS inhibitors
95. Eunhae Lee, FPPS inhibitors
96. Grace Zhang, Fe-S proteins and SQS
97. Ran Pang, FPPS inhibitors (U. Wisconsin Medical School)
98. Shannon Bogue, Inhibition of TB drug targets
99. Mathew Gieuw
100. Anmol Gulati, Synthesis of novel anti-infectives (Massachusetts Institute of Technology)
101. Maximilian Schaettler, Enzyme inhibition assays for anti-infective drug leads
102. Zhuoli Huang, FPPS inhibitors.
103. Noman Baig (UIC Medical School), IspH as a drug target.
104. Armaan Haleem, Isoprenoid biosynthesis as a drug target.
105. Boo Kyung Kim, New drug targets in Mycobacteria.
106. Tianhui Zhou, Targeting staph bacteria with new inhibitors.

Current Students, Postdocs

1. Dr. Satish Malwal (Indian Institute of Science Education and Research, Pune, India), Synthesis of new drug leads.

2. Bing O'Dowd (B.S., UC San Diego): IspH-RPS1 and IspH inhibtors

3. Lu Chen (B.S., Shanghai Normal University, PRC), Structure/function inhibition of prenyl transferases.

4. Hunter Hicks (UG): Synthesis of lipophilic bisphosphonates

5. Fiona Qu (UG): Inhibition of prenyl-tranferase drug targets

6. Alli Shillo (UG): Synthesis of lipophilic bisphosphonates

7. Christopher Shin (UG): Bacterial cell growth inhibitor development

8. Jianan Zhang (UG): Inhibition of prenyl-tranferase drug targets

Teaching

Chemistry 109/203	Freshman Chemistry
Chemistry 110/205	Freshman Chemistry
Chemistry 340/440	Introductory Physical Chemistry
Chemistry 344/444	Kinetics, Thermodynamics, Statistical Mechanics
Chemistry 348/540	Advanced Physical Chemistry
Chemistry 383/445	Dynamics, Structure and Physical Methods
Chemistry 385/447	Chemical Fundamentals
Chemistry 440	Biophysical Chemistry
Chemistry 449	Special Topics: Heteronuclear NMR
Chemistry 450/545	Student Seminar

Committees, etc.

University of Illinois, Institutional Biosafety Committee, (2014- 2015).
NIH MSFE Study Section (5, 2014)
Department of Chemistry, Capricious Grading Committee (2013-present).
Editorial Advisory Board, Journal of the American Chemical Society (2005-2010)
Editorial Advisory Board, Antimicrobial Agents and Chemotherapy (2006-present)
Editorial Board, Journal of Magnetic Resonance
Faculty Senator, University of Illinois at Urbana-Champaign Senate
Editorial Board, Spectroscopy
Executive Committee, Center for Biophysics and Computational Biology
Search Committee for Head, Department of Chemistry
Chair, American Chemical Society-Biophysical Chemistry Sub-Division
Advisory Committee, NSF National High Magnetic Field Laboratory
Editorial Advisory Board, Magnetic Resonance Reviews
Editorial Board, Solid State NMR
Editorial Board, Chemistry and Physics of Lipids
Editorial Advisory Board, The Biochemical Journal
Chair, School of Chemical Sciences Awards Committee
Search Committee for Director, School of Chemical Sciences
Department of Chemistry General Chemistry Committee
IBM-University Shared Instrumentation Review Committee
Continuing Graduate Student Committee
Chemical and Life Sciences Building Committee
Staff Committee
Graduate Fellowships Committee
Physical Chemistry Graduate Student Recruiting Committee
Biophysical Chemistry Advising
Safety Committee
Service Facilities Committee
Pre-Med Students Committee
Executive Committee, Experimental NMR Conference, Inc.

Consultancies

AuricX Pharmaceuticals
Azidex Pharmaceuticals

aaI Pharma, Incorporated
Mobil Research and Development Corporation
Shell Oil Company
Argus-Witco
Allied-Signal (UOP)
Engelhard Corporation
Spectral Data Services, Incorporated
Morgan and Finnegan, New York (in re Mobil v. Amoco)
Arnold, White and Durkee, Houston (in re Shell v. Union Carbide)
Lockwood, Alex, Fitzgibbon and Cummings, Chicago (in re Morton Thiokol v. Argus Witco)

Society Memberships

The Biophysical Society
The Royal Society of Chemistry
The American Physical Society
The American Chemical Society
The American Institute of Chemists
The Biochemical Society (London)
The American Heart Association (Council on Basic Science)
American Association for the Advancement of Science
American Society for Microbiology

Spin-off Companies Founded/Co-Founded
Magnetic Resonance Systems
Probe Systems
Group Four Properties
Spectra Data Services (http://www.sdsnmr.com)
Group Five Properties
Azidex Pharmaceuticals
AuricX Pharmaceuticals

Research Support at Illinois (1975-present date)

1. National Institutes of Health (HL-19481), "High Field NMR Studies of Respiratory Proteins and Model Systems"

$ 70,017	1976-1977
$ 32,683	1977-1978
$ 26,919	1978-1979
$ 44,500	1979-1980
$ 47,000	1980-1981
$ 50,000	1981-1982
$ 55,000	1982-1983
$ 60,000	1983-1984
$ 65,000	1984-1985
$185,000	1985-1986
$140,000	1986-1987
$145,000	1987-1988
$159,000	1988-1989
$155,000	1989-1992
$165,000	1992-1993
$170,000	1993-1994

$175,000	1994-1996
$200,000	1996-1997
$210,000	1997-1998
$220,000	1998-1999
$230,000	1999-2000
$300,000	2000-2001
$300,000	2001-2002
$300,000	2002-2003
$300,000	2003-2004

2. National Science Foundation (PCM 76-01491; 78-23021; 81-17813; 84-6771). "Structure of Model and Biological Membranes"

$ 50,000	1976-1977
$ 54,000	1977-1978
$ 30,000	1978-1979
$ 50,000	1979-1980
$ 55,000	1980-1981
$ 60,000	1981-1982
$ 66,000	1982-1983
$ 66,000	1983-1984
$ 66,000	1984-1985
$ 70,000	1985-1986
$ 70,000	1986-1987
$ 70,000	1987-1988

3. American Heart Association (77-1004), "Lipid-Protein Interactions in Human Lipoproteins"

$ 22,000	1977-1978
$ 22,000	1978-1979
$ 22,000	1979-1980

4. Illinois Heart Association, "Biological Membrane Structure and Dynamics"

$ 12,000	1977-1978
$ 12,000	1979-1980

5. Illinois Heart Association (N-6), "Lipid-Cholesterol Interactions"

$ 10,000	1978-1979
$ 10,000	1979-1980

6. Alfred P. Sloan Foundation

$ 10,000	1978-1979
$ 10,000	1979-1980

7. Biomedical Research Support Grant (NIH) (Institutional)

$ 6,475	1976-1977
$ 5,000	1977-1978
$ 4,250	1978-1979
$ 1,700	1979-1980

8. Research Board (Institutional)

$ 15,000	1975-1976
$ 12,280	1977-1978
$ 7,000	1984-1985
$25,000	1992-1993

9. DuPont Grant in Aid (Departmental)

$ 10,000	1975-1976

10. ICR Chem. Regular (Departmental)

$ 7,000	1977-1978
$ 3,000	1984-1985

11. Illinois Heart Association, "Solid State NMR Lipid-Lipid, Lipid-Cholesterol and Lipid-Protein Interactions" (Fellowship to R. Jacobs)

$ 10,000	1977-1978
$ 10,000	1978-1979

12. National Science Foundation, "NMR Studies of Protein Structure via Magnetic Ordering" (NSF Fellowship to T. Rothgeb)

$ 12,500	1979-1980
$ 12,500	1980-1981

13. National Science Foundation (CHE 79-16100), "Regional Instrumentation Facility for Nuclear Magnetic Resonance Spectroscopy"

$902,000	1979-1980
$247,600	1980-1981
$221,800	1981-1982
$139,000	1982-1983
$ 50,000	1983-1984

14. National Institutes of Health (CA-00595), "NMR and Neutron Study of Membranes and Cell Surfaces" (Research Career Development Award)

~$200,000	1979-1984 Five year total salary support

15. American Heart Association (AHA 80-867), "Heme Protein Structure Using Magnetic Ordering"

$ 28,600	1980-1981
$ 29,700	1981-1982
$ 30,800	1982-1983

16. National Science Foundation (PCM 79-23170; 83-02512), "Carbon-13 and Metal Ion NMR of Proteins and Model Systems"

$ 70,000	1980-1981

$ 66,000	1981-1982
$ 60,000	1982-1983
$ 50,000	1983-1984
$ 50,000	1984-1985
$ 50,000	1985-1986

17. Illinois Heart Association (N-12), "Oxygen-17 and Nitrogen-14 NMR of Cell Membranes"

$ 10,000	1981-1982
$ 10,000	1982-1983

18. Instrumentation for Teaching and Research (Bruker, Nicolet Instruments)

$105,100	1982

19. Mobil Oil Corporation, "High Resolution NMR of Solids"

$ 25,000	1983-1984
$ 25,000	1984-1985
$ 30,000	1985-1986
$ 30,000	1986-1987
$ 10,000	1987-1988
$ 10,000	1988-1989
$ 10,000	1989-1990
$ 10,000	1990-1991
$ 10,000	1991-1992
$ 5,000	1992-1993

20. Arnold O. Beckman Research Award, "High Resolution NMR Spectrometer"

$18,000	1983-1984

21. Texaco Corporation, "NMR Studies of Minerals" (with R. J. Kirkpatrick)

$ 45,000	1983-1984
$ 50,000	1984-1985
$ 26,000	1985-1986

22. National Science Foundation (EAR 82-18741) "High-Resolution NMR Spectrometer for Inorganic and Geo-Chemical Research" (with R. J. Kirkpatrick and J. Hower)

$120,000	1983-1984

23. National Science Foundation (PCM 83-06283) "NMR Computer and Data Station for Membrane and Protein Research"

$ 50,000	1983-1984

24. National Science Foundation (DMR 83-11339; DMR 86-15206; DMR 88-14789) "NMR Studies in Catalysis", "NMR Studies of Ionic Solids" (with Mobil Oil Corporation) and "NMR Studies of Oxide Superconductors"

$140,000	1983-1984
$110,000	1984-1985

$130,000	1985-1986
$135,000	1986-1987
$135,000	1987-1988
$140,000 + 40,000	1988-1989
$125,000	1989-1990
$125,000	1990-1991

25. Department of Energy (83-PRI-U/DOE-Sc-0223) "Advanced NMR Characterization of Zeolite Catalysts" (with Signal-UOP Companies)

$100,000	1983-1984
$100,000	1984-1985

26. Signal-UOP Companies (Unrestricted) "NMR of Solids"

$ 75,000	1984-1985
$ 70,000	1985-1986
$ 15,000	1986-1987

27. Engelhard Corporation (Unrestricted) "NMR of Solids"

$ 14,500	1985-1986

28. Shell Oil Company (Unrestricted, CTA, "NMR of Solids")

$ 12,500	1985-1986

29. American Heart Association (87-0756; "Novel NMR Studies of Lipid-Sterol Interactions")

$ 33,000	1987-1988
$ 33,000	1988-1989
$ 33,000	1989-1990

30. National Science Foundation (MRL; NSF DMR 86-12860) "Mechanistic Studies of High-Temperature Superconductivity"

$ 32,500	1988-1989
$ 48,000	1989-1990
$ 61,000	1990-1991
$ 60,000	1991-1992

31. National Institutes of Health (GM 40426) "NMR Studies of Myelin Membrane Structure"

$175,500	1988-1989
$163,700	1989-1990
$170,300	1990-1991
$177,100	1991-1992
$184,200	1992-1993

32. American Heart Association (92013340) "NMR Studies of Pulmonary Surfactant"

$44,000	1992-1993
$44,000	1993-1994
$44,000	1994-1995

33. National Institutes of Health (GM14545) "Protein Electrostatics as Determined by 2D NMR" (Postdoctoral Fellowship to John Pearson).

$ 25,000	1991-1992
$ 27,000	1992-1993
$ 30,000	1993-1994

34. Mobil Oil Company (Unrestricted, CTA, "NMR of Solids")

$10,000	1990-1991
$10,000	1991-1992

35. University of Illinois Graduate Research Board "Protein Shielding Calculations"

$25,000	1992-1993

36. National Science Foundation (UI MRL 89-20538) "Solid-State NMR Studies of Heterogeneous Catalysts"

$40,000	1992-1993
$30,000	1993-1995
$40,000	1995-1996
$15,000	1996-1997

37. IBM Shared University Research Equipment Program, "Molecular Structure via Quantum Chemistry and Magnetic Resonance"

$77,000	1993-1994

38. American Cancer Society "NMR Studies of Interleukins Using Chemical Shifts" (ACS Fellowship to J. G. Pearson)

$ 22,000	1994-1995
$ 24,000	1995-1996

39. American Heart Association, Illinois Affiliate "NMR Structural Studies of Lipids, Sterols and Peptides" (AHA Fellowship to Angel C. de Dios)

$ 18,000	1994-1995

40. American Heart Association, Illinois Affiliate "The Effect of Cholesterol on Gramicidin Ion Channel Formation and Function" (AHA Graduate Fellowship to Shawn Lian)

$ 12,000	1994-1995

41. National Institutes of Health (GM-50694) "Protein Structure via Quantum Chemistry and NMR"

$172,067	1995-1996
$146,329	1996-1997
$150,719	1997-1998
$155,240	1998-1999
$246,000	1999-2000

$253,000	2000-2001
$261,000	2001-2002
$268,000	2002-2003
$278,000	2003-2004
$278,000	2004-2005
$278,000	2005-2006
$278,000	2006-2007

42. DoD-ARPA "NMR Spectrometer for In Situ Characterization of Fuel Cell Catalysts" (Co-PI with A. Wieckowski)

$500,000	1995-1996

43. University of Illinois, Graduate Research Board "High Field NMR Spectrometer" (Co-PI with R. J. Kirkpatrick, A. Wieckowski)

$21,500	1995-1996

44. University of Illinois, Richard G. and Carole J. Cline University Scholar Award

$12,000	1995-1996
$12,000	1995-1997
$12,000	1997-1998

45. National Institutes of Health Training Grant “NMR of heme proteins” (to Mike McMahon)

$15,000	1995-1996
$15,000	1996-1997
$15,000	1997-1998

46. National Institutes of Health Training Grant “NMR studies of sterols in Pneumocystis” (to Ben Moreno)

$15,000	1995-1996
$15,000	1996-1997
$15,000	1997-1998

47. GAANN (Graduate Assistantship as Applied to National Needs) Fellowship “Quantum chemistry of heme proteins and model systems” (to W. Arnold)

$15,000	1996-1997

48. Swiss National Science Foundation “NMR studies of heme proteins and model systems” (Fellowship to Dr. Renzo Salzmann)

$31,000	1996-1997

49. American Heart Association Postdoctoral Fellowship “NMR Studies of heme proteins and model systems” (Fellowship to Dr. Renzo Salzmann)

$18,000	1997-1998

50. J. S. Guggenheim Memorial Foundation “NMR studies of Trypanosoma cruzi and Chagas disease” (Fellowship to Dr. Julio Urbina)

$25,000 1996-1997

51. Heisenberg Fellowship of the Deutsche Forschungsgemeinschaft "NMR of inorganic solids: theory and experiment" (Fellowship to Dr. J. Haase)

$35,000 1996-1997

52. UI Materials Research Laboratory (NSF DMR 89-20538) "Multiple probe NMR spectrometer) (with R. J. Kirkpatrick and A. Wieckowski)

$25,000 1996-1997

53. National Science Foundation grant (EAR-9705746) "NMR-quantum chemical computational study of silicate-based materials" (with R. J. Kirkpatrick)

$75,000 1997-1998
$75,000 1998-1999

54. National Science Foundation (CTS-9726419) "Nuclear magnetic resonance investigations in fuel cell catalysis" (with A. Wieckowski)

$75,000 1998-1999
$78,000 1999-2000
$80,000 2000-2001

55. University of Illinois, Graduate Research Board, "Phosphorus and Carbon-13 NMR Studies of Parasitic Protozoa" (Co-PI with R. Docampo)

$25,000 1999-2000

56. IMGIP Fellowship (Illinois Minority Graduate Incentive Program) (to Ben Moreno)

$15,500 1999-2000
$15,500 2000-2001
$15,500 2001-2002

57. American Heart Association Predoctoral Fellowship (to Mike Martin) "New Chemotherapeutic Approaches in the Treatment of Parasitic Protozoan Diseases"

$22,500 2000-2001
$22,500 2001-2002

58. American Heart Association (Midwest Affiliate) Predoctoral Fellowship (to Junhong Mao) "NMR and Computational Studies of Heme Protein Structure"

$23,500 2001-2002
$23,500 2002-2003

59. American Heart Association (Midwest Affiliate) "NMR of Trypanosoma cruzi and Design of V/H^+-Pyrophosphatase Inhibitors"

$55,000 2001-2002
$55,000 2002-2003

60. UNDP/World Bank/WHO, "Synthesis of Bisphosphonates as Anti-Parasitic Agents"

$15,000	2001-2002

61. National Institutes of Health NRSA grant GM-65782 (to Gary Meints) "High Field NMR Studies of Parasitic Protozoa"

$30,000	2001-2002
$30,000	2002-2003
$30,000	2003-2004

62. Alumni Research Scholar Professor Award, unrestricted.

$15,000	2003-2004
$15,000	2004-2005
$15,000	2005-2006
$15,000	2006-2007
$15,000	2007-2008
$15,000	2008-2009
$15,000	2009-2010
$15,000	2010-2011
$15,000	2011-2012
$15,000	2012-2013

63. National Institutes of Health (GM-65307) "Prenyldiphosphate Synthase Inhibitors: Novel Anti-Parasitic Agents" (R. Docampo, Co-PI)

$316,000	2002-2003
$316,000 + $76,500 (S1)	2003-2004
$316,000	2004-2005
$316,000	2005-2006

64. National Science Foundation (CTS 0212216), "NMR Investigations in Fuel Cell Catalysis" (A. Wieckowski, P.I.)

$84,000	2002-2003
$84,000	2003-2004
$84,000	2004-2005

65. American Heart Association, Midwest Affiliate (0310041Z) "Improving Chemotherapeutics for the Treatment of Chagas Disease"

$24,500	2003-2004
$24,500	2004-2005

66. NIH Training Grant (GM-08276) Award to Annette Leon-Rossell. "Bisphosphonates as Novel Anti-Infective and Anti-Cancer Agents"

$20,000	2003-2004
$20,000	2004-2005
$20,000	2005-2006

67. National Institutes of Health (AI060452) "Bisphosphonate Inhibitors of NRTI Excision" (M. Parniak, P.I., total award = $2.8M)

$166,000	2004-2005
$169,000	2005-2006
$173,000	2006-2007
$177,000	2007-2008
$179,000	2008-2009

68. Leukemia and Lymphoma Society "Design and Synthesis of Bisphosphonate and Pyrophosphate Compounds for Immunotherapy". Special Fellowship to Yongcheng Song.

$55,000	2005-2006
$55,000	2006-2007
$55,000	2007-2008

69. National Institutes of Health (GM073216-26; renewal of EB00271-25) "Metalloprotein Structure, Function and Inhibition"

$290,000	2005-2006
$290,000	2006-2007
$290,000	2007-2008
$290,000	2008-2009

70. American Heart Association (Midwest Affiliate), Postdoctoral Fellowship to Yonghui Zhang. "Bisphosphonates for Chagas Disease Therapy"

$40,000	2005-2006
$40,000	2006-2007

71. American Heart Association (Midwest Affiliate), Predoctoral Fellowship for Sujoy Mukkamala. "NMR Studies of Isoprene Biosynthesis Pathway Enzymes"

$26,000	2006-2007
$26,000	2007-2008

72. National Institutes of Health (GM65307-09; renewal of -05) "Prenyldiphosphate Synthase Inhibitors: Novel Anti-Infective Agents"

$328,650	2006-2007
$328,650	2007-2008
$328,650	2008-2009
$328,650	2009-2010
$352,000	2010-2011
$352,000	2011-2012
$352,000	2012-2013
$352,000	2013-2014

73. National Institutes of Health (AI074233-13; renewal of GM-50624) "Protein Structure-Function by NMR, Crystallography and Computational Chemistry"

$365,200	2008-2009
$365,200	2009-2010
$365,200	2010-2011

$365,200	2011-2012
$365,200	2012-2013

74. American Heart Association (Midwest Affiliate), Predoctoral Fellowship to Weixue Wang. "Novel Approach to Anti-infectives Targeting Iron-sulfur Proteins"

$26,000	2010-2011
$26,000	2011-2012

75. American Heart Association (Midwest Affiliate), Predoctoral Fellowship to Jikun Li. "Anti-bacterials and Anti-parasitics Targeting Isoprenoid Biosynthesis"

$26,000	2011-2012
$26,000	2012-2013

76. National Institutes of Health (CA 1R01CA158191-01) "Next Generation Bisphosphonates for Chemo- and Immuno-Therapy"

$316,000	2011-2012
$316,000	2012-2013
$316,000	2013-2014
$316,000	2014-2015
$316,000	2015-2016

77. National Institutes of Health (GM065307) "Structure, Function and Inhibition of [4Fe-4S] Proteins"

$357,000	2014-2015
$357,000	2015-2016
$357,000	2016-2017
$357,000	2017-2018

78. University of Illinois, Harriet A. Harlin Professorship

$40,000	2012-2013
$40,000	2013-2014
$40,000	2014-2015
$40,000	2015-2016
$40,000	2016-2017
$40,000	2017-2018
$40,000	2018-2019
$40,000	2019-2020
$40,000	2020-2021
$40,000	2021-2022

79. University of Illinois, Oldfield Research Fund

$50,000	2013-2049