

Charles L. Lerman, Ph.D.

Department of Chemistry
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SUMMARY

Chemist and educator with extensive teaching and research experience. Excellent teaching, mentoring, and collaborative abilities, as well as general analytical, organizational, and communication skills. Successful procurement of research grant funding, including Federal.

Areas of teaching experience and technical expertise include:

Organic, Physical-Organic, Bioorganic, Biophysical, and Biological Chemistry.

NMR Spectroscopy - small molecules and proteins.

Computational Chemistry - data mining, molecular modeling, QSAR, protein structure.

Pharmaceutical Chemistry - computer-assisted drug design.

Scientific Method, Research Methods.

EDUCATION

Postdoctoral Fellow, Biochemistry, U. of Pennsylvania, 1979-80. Supervisor: Mildred Cohn.

Ph.D., Organic Chemistry, Harvard U., 1974. Supervisor: Frank H. Westheimer

M.A., Chemistry, Harvard U., 1970

B.S., Chemistry, Yale U., *magna cum laude*, 1969. Elected to Phi Beta Kappa.

PROFESSIONAL TEACHING EXPERIENCE

Haverford College, Haverford, Pa.

Assistant Professor of Chemistry, 1976-81

Visiting Professor of Chemistry, 2010-present

Juniata College, Huntingdon, Pa.

Assistant Professor of Chemistry, 1974-76

Harvard University, Cambridge, Mass.

Graduate Teaching Fellow, 1969-74

Teaching: pre-organic, organic, physical, and biological chemistry; special topics for nonscientists.

Research: bioorganic and biophysical chemistry; enzyme mechanisms and model systems.

Selected Special Accomplishments

Created and taught "pre-organic" chemistry program for under-prepared students.

Created and taught advanced courses in: Biochemical Mechanisms, Magnetic Resonance in Biochemical Systems, Origin of Life.

Created and taught a classroom seminar, "Introduction to Research," for students beginning laboratory research to discuss scientific method and research methods.

Served as academic advisor to numerous students.

Formed and coached rugby clubs at Juniata and Haverford.

OTHER PROFESSIONAL EXPERIENCE

AstraZeneca Pharmaceuticals, Wilmington, Delaware
(formerly ICI and Zeneca)

Principal Chemist, 1999-2008
Senior Research Chemist, 1985-1999
Research Chemist, 1981-1985

Summary of Activities

- Supervised NMR laboratory and conducted NMR studies of protein-ligand binding. Purchased high-field instruments. Introduced remote data processing by end users.
- Headed interdisciplinary task force to study receptor structures. Accomplished photoaffinity labeling of the NK2 receptor,
- Computational chemistry software for molecular design, 3D similarity scoring, high-throughput screening (HTS) data analysis, compound collection enhancement.
- Software for pattern recognition and decision making in large, multidimensional data sets.
- Methodology and applications of comparative molecular field analysis (CoMFA) and protein homology modeling.
- Mentored scientists in transition between fields for their career development.

GRANTS AND AWARDS

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| 2004 | AstraZeneca Global Scientific and Technical Achievement Award, for contributions to "C-Lab," a web-based suite of property predictions. |
| 1998 | First AstraZeneca International Directors' Award for Innovation and Creativity, for "PANDORA" software for data organization, analysis, and pattern recognition. |
| 1977-1984 | N.I.H. research grants, "Active Site of δ -Aminolevulinic Acid Dehydratase." Total of \$136,000. |
| 1974-1977 | P.R.F. research grant, "The Mechanism of Action of 5-Aminolevulinic Acid Dehydratase." |
| 1970 & 1973 | Harvard Chemistry Department teaching prizes in organic chemistry and general chemistry. |
| 1969 | Churchill Scholarship, Churchill College, Cambridge Univ., Cambridge, England. Awarded but declined. |

PUBLICATIONS

J.R. Damewood, Jr., C.L. Lerman, and B.B. Masek, "NovoFLAP: A Ligand-Based De Novo Design Approach for the Generation of Medicinally Relevant Ideas," *J. Chem. Inf. Model.*, **50**, 1296–1303 (2010).

J.R. Krumrine, A.T. Maynard, and C.L. Lerman, "Statistical Tools for Virtual Screening," *J. Med. Chem.*, **48**, 7477-7481 (2005).

J.R. Krumrine, A.T. Maynard, and C.L. Lerman, "Statistical Tools for Database Docking," poster at Gordon Research Conference on Computer-Aided Drug Design, 2003.

C.L. Lerman, "PANDORA: Integrated Visualization, Analysis, and Decision Making within Excel Spreadsheets," presented at Molecular Medicine Marketplace conference, Santa Clara, Cal., March, 2003, and at Intelligent Drug Discovery and Development conference, Philadelphia, Pa., May, 2003.

V.G. Matassa, Y.K. Yee, F.J. Brown, P.R. Bernstein, C.L. Lerman, and J.E. Hall, "A New Family of Peptidoleukotriene Antagonists: Evolution, Synthesis, and Structure," presented at the Ischia Advanced School of Organic Chemistry, Napoli, Sept., 1988.

F.R. Zuleski, A.F. Heald, S.F. Palermo, R.C. Spreen, C.L. Lerman, J.E. Hall, Y.K. Yee and J.O. Malbica, "Identification of the Major Metabolite of ICI 198,615, a Leukotriene Antagonist, by Specialized NMR Techniques," Presented at FASEB Meeting, March 31, 1987, Washington, D.C.

C.L. Lerman and E.B. Whitacre, "Specific Deuteration of δ -Aminolevulinic Acid by Pyridoxal-Catalyzed Exchange and Analysis of Products Using an Aqueous Lanthanide NMR Shift Reagent," *J. Org. Chem.*, **46**, 468-470 (1981).

C.L. Lerman and M. Cohn, "Laser Photo-CIDNP of Pyridoxal Phosphate and Pyridoxyllysine Residues: An Extrinsic Probe for Non-Aromatic Amino Acid Residues in Proteins," *Biochem. Biophys. Res. Commun.*, **97**, 121-125 (1980).

C.L. Lerman and M. Cohn, "³¹P NMR Quantitation of the Displacement of Equilibria of Arginine, Creatine, Pyruvate, and 3-P-Glycerate Kinase Reactions by Substitution of Sulfur for Oxygen in the β -Phosphate of ATP," *J. Biol. Chem.*, **255**, 8756-8760 (1980).

C.L. Lerman, J.J.A. Marota, and J. Gerek, "A Model for the Active Site of Ribonuclease," 12th Mid-Atlantic Regional Meeting of the American Chemical Society, Hunt Valley, Maryland, April, 1978.

C.L. Lerman, "An Effective Demonstration of the Behavior of Indicators and Biochemicals in Buffers," *J. Chem. Educ.*, **53**, 634-635 (1976).

C.L. Lerman and F.H. Westheimer, "The Ionization of Oxyphosphoranes: Phosphonium Ions and Hexacoordinated Phosphorus Anions," *J. Amer. Chem. Soc.*, **98**, 179-184 (1976).

P.D. Bartlett, A.L. Baumstark, M.E. Landis, and C.L. Lerman, "Phosphorane Formation from the Reaction of Trivalent Phosphorus Compounds with Tetramethyl-1,2-dioxetane," *J. Amer. Chem. Soc.*, **96**, 5267-5268 (1974).