

## CYNTHIA K. LARIVE

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### CONTACT INFORMATION:

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**PERSONAL:** Married and mother of two daughters Dr. Erin Kaplan (32) and Ms. Megan Larive (30)

### EDUCATION:

B.S. in Chemistry, South Dakota State University, 1980  
M.S. in Inorganic Chemistry, Purdue University, 1982  
Ph.D. in Analytical Chemistry, University of California, Riverside, 1992

### PROFESSIONAL EXPERIENCE:

Interim Provost and Executive Vice Chancellor, UC-Riverside, 2/2017 – present  
Vice Provost for Undergraduate Education, UC-Riverside, 7/2016 -2/2017  
Interim Dean, College of Natural and Agricultural Sciences (CNAS), UC-Riverside, 7/2015 – 12/2015  
Divisional Dean for Physical Sciences and Mathematics, UC-Riverside, 10/2013 - 6/2015 and 1/2016-7/2016  
Chair, Department of Chemistry, UC-Riverside, 7/2012 - 9/2013  
Professor of Chemistry, Step VIII; cooperating faculty member in Bioengineering, and Biomedical Sciences, member of the Center for Plant Cell Biology (CEPCEB), the Institute for Integrative Genome Biology (IGGB), and the Environmental Toxicology graduate program, 2005 -present  
Sabbatical Leave, Ronzoni Institute for Chemistry and Biochemistry Research, Milan, Italy, 2012  
Director Analytical Chemistry Instrumentation Facility, 2006 - 2010  
Director, UC-Riverside NSF REU Program in Bioanalytical Science, 2006 - 2008  
Professor of Chemistry and Courtesy Prof. Pharmaceutical Chemistry, University of Kansas, 2003 - 2004  
Director, University of Kansas NSF REU Program in Chemistry, 2003 - 2004  
Associate Professor of Chemistry, University of Kansas, 1998-2003  
Courtesy Associate Professor of Pharmaceutical Chemistry, University of Kansas, 2001 - 2003  
Sabbatical Leave with Professor Jonathan Sweedler, University of Illinois, 2001  
Assistant Professor of Chemistry, University of Kansas, 1992 - 1998  
Graduate Research and Teaching Assistant, UC-Riverside, 1988 -1992  
Manager, AA-ICP Lab, Engineering and Mining Experiment Station, South Dakota School of Mines and Technology, Rapid City, South Dakota 1984 - 1988

### HONORS AND AWARDS

National Award for Volunteer Service to the American Chemical Society, 2015  
Fellow, Academy for Innovative Higher Education Leadership, 2014 -2015  
ACS Fellow, 2011  
UC-Riverside Innovative Teaching Award, 2011  
AAAS Fellow, 2008  
J. Calvin Giddings Award for Excellence in Education, ACS Division of Analytical Chemistry, 2007  
Honorary Doctorate, College of Pharmacy, Semmelweis University, Budapest, Hungary, 2005  
IUPAC Fellow, 2004  
University of Kansas Award for Teaching Excellence, 2002  
IUPAC Young Observer, 2001  
Kaw Valley Girl Scout Woman of Distinction, 1997  
Eli Lilly New Faculty Award, 1996  
National Science Foundation CAREER Award, 1995

Orange County Graduate Women in Science Scholarship, 1991  
U.C. Riverside Dissertation Fellowship, 1991  
ACS Division of Analytical Chemistry Full-year Fellow, 1990  
U.C. Riverside Chancellor's Distinguished Fellow 1988, 1989  
S.D.S.U. Stephen Briggs Scholarship, 1976-1980  
S.D.S.U. Outstanding Analytical Chemistry Student, 1979

#### EDITORIAL ACTIVITIES

**Associate Editor**, *Analytical Chemistry*, 6/2015 - present  
**Associate Editor**, *Analytical and Bioanalytical Chemistry*, 1/2013 - 12/2014  
**Editorial Advisory Board Member**, *Analytical Chemistry*, 2013 - 2015  
**Editorial Advisory Board Member**, *Analytical and Bioanalytical Chemistry*, 2001 - 2012,  
**Editor-in-chief**, Analytical Sciences Digital Library; [www.asdlib.org](http://www.asdlib.org), an NSF-funded digital library  
**Reviewer** for Analyst, Analytical and Bioanalytical Chemistry, Analytical Biochemistry, Analytical Chemistry, Analytical Methods, Applied Spectroscopy, Biochemistry, Biopolymers, Chirality, Environmental Science and Technology, Glycobiology, Journal of Agricultural and Food Chemistry, Journal of the American Chemical Society, Journal of the American Society for Mass Spectroscopy, Journal of Biomolecular NMR, Journal of Carbohydrate Research, Journal of Chemical Education, Journal of Colloid and Interface Science, Journal of Magnetic Resonance, Journal of Pharmaceutical and Biomedical Analysis, Journal of Physical Chemistry, Langmuir, Magnetic Resonance in Chemistry, Metabolomics, Nature Chemical Biology, Talanta, Tetrahedron Letters.

**H-Index:** 40, [https://scholar.google.com/citations?user=pX\\_OGWwAAAAJ&hl=en](https://scholar.google.com/citations?user=pX_OGWwAAAAJ&hl=en)

**PUBLICATIONS:** (underlining denotes coauthors: undergraduate, PUI faculty, or high school teacher)

1. D.L. Rabenstein, C.K. Larive, Rotating-Frame Nuclear Overhauser Enhancement Spectroscopy of Aqueous Solutions with Elimination of the Water Resonance by Transverse Relaxation, *J. Magn. Res.* **87**:352-356 (1990).
2. C.K. Larive, D.L. Rabenstein, Two-dimensional <sup>1</sup>H NMR Spectroscopy of Aqueous Solutions with Elimination of the Water Resonance by Transverse Relaxation: Application to the Assignment of the <sup>1</sup>H NMR Spectrum of Reduced Arginine Vasopressin, *Mag. Reson. Chem.* **29**:409-417 (1991).
3. C.K. Larive, L. Guerra, D.L. Rabenstein, Cis/Trans Conformational Equilibrium across the Cysteine<sup>6</sup>-Proline Peptide Bond of Oxytocin, Arginine Vasopressin and Lysine Vasopressin, *J. Am. Chem. Soc.* **114**:7331-7337 (1992).
4. C.K. Larive, D.L. Rabenstein, Characterization of the Dynamics of the Cis-Trans Isomerization about the Proline Amide Bond of Oxytocin and Arginine Vasopressin in Aqueous and Methanol Solutions, *J. Am. Chem. Soc.* **115**:2833-2836 (1993).
5. C. Schöneich, A. Hühmer, S.R. Rabel, J.F. Stobaugh, S.D.S. Jois, C.K. Larive, T.J. Siahhan, T.C. Squier, D.J. Bigelow, T. Williams, Separation and Analysis of Peptides and Proteins, *Anal. Chem.* **67**:155R-181R (1995).
6. M. Lin, D.A. Jayawickrama, R.A. Rose, J.A. DeViscio, C.K. Larive, NMR Spectroscopic Analysis of the Selective Complexation of the Cis and Trans Isomers of Phenylalanyl-Proline by  $\beta$ -Cyclodextrin, *Anal. Chim. Acta* **307**:449-457 (1995).
7. M. Lin, C.K. Larive, Detection of Insulin Aggregates with Pulsed-field Gradient NMR Spectroscopy, *Anal. Biochem.* **229**:214-220 (1995).
8. C.K. Larive, M. Lin, B.J. Piersma, W.R. Carper, Diffusion Ordered Spectroscopy (DOSY) of Room Temperature Chloroaluminate Melts, *J. Phys. Chem.* **99**:12409-12412 (1995).
9. D. Jayawickrama, S. Zink, D. Vander Velde, R.I. Effiong, C.K. Larive, Conformational Analysis of the  $\beta$ -amyloid Peptide Fragment,  $\beta$ (12-29), *J. Biomol. Struct. Dynam.* **13**:229-244 (1995).
10. W.R. Carper, G.J. Mains, B.J. Piersma, S.L. Mansfield, C.K. Larive, <sup>13</sup>C NMR Relaxation and <sup>1</sup>H Diffusion (DOSY) Studies of an Acidic Chloroaluminate Melt, *J. Phys. Chem.* **100**:4724-4728 (1996).
11. M. Lin, M.F. Chan, V.N. Balaji, R.S. Castillo, C.K. Larive, The Synthesis and Conformational Analysis of Cyclic Pentapeptide Endothelin Antagonists, *Int. J. Peptide Protein Res.* **48**:229-239 (1996).

12. C.K. Larive, A. Rogers, M. Morton, W.R. Carper,  $^{113}\text{Cd}$  NMR Binding Studies of Cd-Fulvic Acid Complexes: Evidence of Fast Exchange, *Environ. Sci. Technol.* **30**:2828-2831 (1996).
13. A.F. Hühmer, G.I. Aced, M.D. Perkins, R.N. Gursoy, D.S. Seetharama Jois, C.K. Larive, T.J. Siahhan, C. Schöneich, Separation and Analysis of Peptides and Proteins, *Anal. Chem.* **69**:29R-57R (1997).
14. A. M. Dixon, C.K. Larive, Modified Pulsed-field Gradient NMR Experiments for Improved Selectivity in the Measurement of Diffusion Coefficients in Complex Mixtures: Application to the Analysis of the Suwannee River Fulvic Acid, *Anal. Chem.* **69**:2122-2128 (1997).
15. M.D. Morton, F.H. Walters, D.S. Aga, E.M. Thurman, C.K. Larive, NMR Identification of New Sulfonic Acid Metabolites of Chloroacetanilide Herbicides, *J. Agric. Food Chem.* **45**:1240-1243 (1997).
16. G.T. Timberlake, A.W. Gemperli, C.K. Larive, K.A. Warren, M.A. Mainster, Free-Radical Production by Neodymium:YAG Laser Photodisruption, *Ophthalm. Surg. Lasers* **28**:582-589 (1997).
17. C. K. Larive, D. Jayawickrama, L. Orfi, Quantitative Analysis of Peptides with NMR Spectroscopy, *Appl. Spectrosc.* **51**:1531-1536 (1997).
18. C.K. Larive, S.M. Levine, The pH Dependence of Aggregate Formation by Galactosylsphingosine (Psychosine) with  $^1\text{H}$  NMR and Electron Microscopy. Pathological Implications for Krabbe's Disease, *Lipids* **32**:1035-1040 (1997).
19. S.L. Mansfield, D.A. Jayawickrama, J.S. Timmons, C.K. Larive, Measurement of Peptide Aggregation with Pulsed-field Gradient Nuclear Magnetic Resonance Spectroscopy, *Biochim. Biophys. Acta* **1382**:257-265 (1998).
20. C.K. Larive, M. Lin, B.S. Kinnear, B.J. Piersma, C.E. Keller, W.R. Carper,  $^{13}\text{C}$  and  $^{27}\text{Al}$  NMR Relaxation, Viscosity and  $^1\text{H}$  Diffusion (DOSY) Studies of an Ethylaluminum Dichloride Melt, *J. Phys. Chem.* **102**:1717-1723 (1998).
21. L. Orfi, M. Lin, C.K. Larive, Measurement of SDS Micelle-Peptide Association using  $^1\text{H}$  NMR Chemical Shift Analysis and Pulsed-field Gradient NMR Spectroscopy, *Anal. Chem.* **70**:1339-1345 (1998).
22. A. A. DiSpirito, J.A. Zahn, D.W. Graham, H.J. Kim, C.K. Larive, C.D. Cox, A. Taylor, Copper-Binding Compounds from *Methylosinus trichosporium* OB3b, *J. Bacteriology* **180**:3606-3613 (1998).
23. J. Hong, S. Sun, T. Derrick, C.Larive, K.B. Schowen, R.L. Schowen, Transition-State Theoretical Interpretation of the Catalytic Power of Pyruvate Decarboxylases: The Roles of Static and Dynamical Considerations, *Biochim. Biophys. Acta* **1385**:87-200 (1998).
24. D.A. Jayawickrama, C.K. Larive, E.F. McCord, D.C. Roe, Polymer Additives Mixture Analysis using Pulsed-field Gradient NMR Spectroscopy, *Magn. Reson. Chem.* **36**:755-760 (1998).
25. V.M. Rao, M. Lin, C.K. Larive, M.Z. Southard, A Mechanistic Study of Griseofulvin Dissolution into Surfactant Solutions in Laminar Flow Conditions, *J. Pharm. Sci.* **87**:786-796 (1998).
26. A.M. Dixon, C.K. Larive, E.A. Nantis, W.R. Carper, Direct Determination of Correlation Times: Analysis of the Cd-CyDTA Complex by the Relaxation Rate Ratio Method, *J. Phys. Chem.* **102**:10573-10578 (1998).
27. C.K. Larive, Nuclear Magnetic Resonance Spectroscopy, *The McGraw-Hill Encyclopedia of Science and Technology* McGraw-Hill, Inc., New York, 8th ed., 1997, Vol. 12, pp. 168-174.
28. C.K. Larive, S. Lunte, M. Zhong, M. Perkins. G.S. Wilson, G. Gokulrangan, T. Williams. F. Afroz, C. Schöneich, T.S. Derrick, R. Middaugh, S. Bogdanowich-Knipp, Separation and Analysis of Peptides and Proteins, *Anal. Chem.* **71**:389R-423R (1999).
29. A.M. Dixon, M.A. Mai, C.K. Larive, Interaction Between 4'-Fluoro-1'-Acetonaphthone with Natural Aquatic Organic Material, *Environ. Sci. Technol.* **33**:958-964 (1999).
30. D.A. Jayawickrama, C.K. Larive, Analysis of the Trimethylsilylpropionic Acid - $\beta$  (12-28) Peptide Binding Equilibrium with NMR Spectroscopy, *Anal. Chem.* **71**:2117-2112 (1999).
31. S.L. Mansfield, A.J. Gotch, G.S. Harms, C.K. Johnson, C.K. Larive, Complementary Analysis of Peptide Aggregation by NMR and Time-Resolved Laser Spectroscopy, *J. Phys. Chem.* **103**:2262-2269 (1999).
32. T. Derrick, C.K. Larive, The Use of PFG-NMR for the Measurement of Diffusion Coefficients of the Cis and Trans Isomers of Proline-Containing Peptides, *Appl. Spectrosc.* **53**:1595-1600 (1999).
33. A.M. Dixon, C.K. Larive, NMR Spectroscopy with Spectral Editing for the Analysis of Complex Mixtures, *Appl. Spectrosc.* **53**:426A-440A (1999).

34. K. F. Morris, B. J. Cutak, A. M. Dixon, C. K. Larive, Analysis of Diffusion Coefficient Distributions in Humic and Fulvic Acids by means of Diffusion Ordered NMR Spectroscopy, *Anal. Chem.* **71**:5315-5321 (1999).
35. W.H. Graham, D.W. Graham, F. deNoyelles, Jr., V.H. Smith, C.K. Larive, E.M. Thurman, Metolachlor and Alachlor Breakdown Product Formation Patterns in Aquatic Field Microcosms, *Environ. Sci. Technol.* **33**:4471-4476 (1999).
36. D. A. Jayawickrama, C. K. Larive, Investigation of Aggregation and Binding of  $\beta$ (12-28) using NMR Spectroscopy, in *Peptides, Frontiers of Peptide Science*, J. P. Tan and P. T. P. Kaumaya, Eds., Kluwer, Dordrecht, 1999, pp. 807-808.
37. J. R. Lead, K. J. Wilkinson, E. Balnois, B. J. Cutak, C. K. Larive, S. Assemi, R. Beckett, Diffusion Coefficients and Polydispersities of the Suwannee River Fulvic Acid: Comparison of Fluorescence Correlation Spectroscopy, Pulsed-Field Gradient Nuclear Magnetic Resonance, and Flow Field-Flow Fractionation, *Environ. Sci. Technol.* **34**:3508-3513 (2000).
38. M. L. Pommès, C. K. Larive, E. M. Thurman, W. Reed Green, W. H. Orem, C. E. Rostad, T. B. Coplen, B. J. Cutak, A. M. Dixon, Source and Haloacetic Acid/Trihalomethane Formation Potentials of Aquatic Humic Substances in the Wakarusa River and Clinton Lake near Lawrence, KS, *Environ. Sci. Technol.* **34**:4278-4286 (2000).
39. J. L. Razak, B. J. Cutak, C. K. Larive, C. E. Lunte, Correlation of the Capacity Factor in Vesicular Electrokinetic Chromatography, *Pharm. Res.* **18**:104-111 (2001).
40. S. A. Rogers, D. Vander Velde, C. K. Larive, Evaluation of NMR Diffusion Measurements for the Conformational Analysis of Flexible Peptides, *Fresenius J. Anal. Chem.* **369**:308-312 (2001).
41. W. H. Otto, W. R. Carper, C. K. Larive, Measurement of Cadmium(II) and Calcium(II) Complexation by Fulvic Acids Using  $^{113}\text{Cd}$  NMR, *Environ. Sci. Technol.* **35**:1463-1468 (2001).
42. W. H. Otto, S. D. Burton, W. R. Carper, C. K. Larive, Examination of Cadmium(II)-Fulvic Acid Complexes using  $^{113}\text{Cd}$  NMR Relaxation Measurements, *Environ. Sci. Technol.* **35**:4900-4904 (2001).
43. M. Lacey, J. V. Sweedler, C. K. Larive, D. Farrant, A. Pipe, Analysis of a Single Combichem Bead, *J. Magn. Reson.* **153**:215-222 (2001).
44. W. H. Otto, C. K. Larive, Improved Spin-echo Edited NMR Diffusion Measurements, *J. Magn. Reson.* **153**:273-276 (2001).
45. T. S. Derrick, E. F. McCord, C. K. Larive, Analysis of Protein/Ligand Interactions with NMR Diffusion Measurements: The Importance of Eliminating the Protein Background, *J. Magn. Reson.* **155**:217-225 (2002).
46. W. H. Otto, M. H. Keefe, J. T. Hupp, C. K. Larive, Analysis of Molecular Square Size and Purity via Pulsed-Field Gradient NMR Spectroscopy *Inorg. Chem.* **41**:6172-6174 (2002).
47. L. H. Lucas, W. H. Otto, C. K. Larive, The 2D-J- DOSY Experiment: Resolving Diffusion Coefficients in Mixtures, *J. Magn. Reson.* **156**:138-145 (2002).
48. A. M. Wolters, D. A. Jayawickrama, C. K. Larive, J. V. Sweedler, Capillary Isotachopheresis/NMR: Extension to Trace Impurity Analysis and Improved Instrumental Coupling, *Anal. Chem.* **74**:2306-2313 (2002).
49. T. S. Derrick, L. H. Lucas, J.-L. Dimicoli, C. K. Larive, The  $^{19}\text{F}$  Diffusion NMR Analysis of Enzyme-Inhibitor Binding, *Mag. Res. Chem.* **40**:S98-S105 (2002).
50. A. M. Wolters, D. A. Jayawickrama, C. K. Larive, J. V. Sweedler, Insights into the cITP process using on-line NMR spectroscopy, *Anal. Chem.* **74**:4191-4197 (2002).
51. W. Sun, C. K. Larive, M. Z. Southard, A Mechanistic Study of Danazol Distribution into Ionic Surfactant Solutions, *J. Pharm. Sci.* **92**:424-435 (2003).
52. W. H. Otto, D. J. Britten, C. K. Larive, NMR Diffusion Analysis of Surfactant-Humic Substance Interactions, *J. Colloid Interface Sci.* **261**:508-513 (2003).
53. B. A. Wilson, V. A. Smith, F. deNoyelles Jr., C. K. Larive Ecological Impact Assessment of Three Pharmaceutical and Personal Care Product Chemicals Using Freshwater Algal Assemblies, *Environ. Sci. Tech.* **37**:1713-1719 (2003).
54. L. H. Lucas, J. Yan, C. K. Larive, E. R. Zartler, M. J. Shapiro Transferred Nuclear Overhauser Effect in Nuclear Magnetic Resonance Diffusion Measurements of Ligand-Protein Binding, *Anal. Chem.* **75**: 627-634 (2003).

55. L. A. Cardoza, V. K. Almeida, A. Carr, D. W. Graham, C. K. Larive, Separations Coupled with NMR Detection: Emerging Techniques for the Study of Contamination Fate, *Trends in Analytical Chemistry* **22**:766-775 (2003).
56. C. W. Knapp, D. W. Graham, G. Berardesco, F. deNoyelles Jr., B. J. Cutak, C. K. Larive, Nutrient Level, Microbial Activity, and Alachlor Transformation in Aerobic Aquatic Systems, *Water Res.* **37**:4761-4769 (2003).
57. L. A. Cardoza, T. D. Williams, B. Drake, C. K. Larive, LC/MS/MS and LC/NMR for the Structure Elucidation of Ciprofloxacin Transformation Products in Pond Water Solution, in *Mass Spectrometry, LC/MS/MS and TOF/MS: Analysis of Emerging Contaminants*, ACS Symposium volume 850, I. Ferrer and E. M. Thurman Eds., (2003) Oxford University Press and The American Chemical Society, Washington, pp.146-160.
58. L.A. Cardoza, B. J. Cutak, J. Ketter, C. K. Larive, HPLC-NMR Investigation of the Isomerization of Alachlor-Ethane Sulfonic Acid, *J. Chromatogr. A.* **1022**:131-137 (2004).
59. L. H. Lucas, C. K. Larive, Measuring Ligand-Protein Binding Using NMR Diffusion Measurements, *Concepts in Magnetic Resonance* **20A**:24-41 (2004).
60. K. E. Price, L. H. Lucas, C. K. Larive, Analytical Applications of NMR Diffusion Measurements, *Anal. Bioanal. Chem.* **378**:1405-1407 (2004).
61. C. S. Uyguner, C. Hellriegel, W. H. Otto, C. K. Larive, Characterization of Structural Features of Humic Substances: Implications for Trihalomethane Formation, *Anal. Bioanal. Chem.* **378**:1579-1586 (2004).
62. H.J. Kim, D. W. Graham, A. A. DiSpirito, M. Alterman, N. Galeva, C. K. Larive, D. Asunskis, P. M. A. Sherwood, Methanobactin: A Copper-Acquisition Compound from Methane-Oxidizing Bacteria, *Science* **305**:612-1615 (2004).
63. L. A. Cardoza, A. K. Korir, W. H. Otto, C. J. Wurrey, C. K. Larive, Environmental Applications of NMR Spectroscopy, *Prog. NMR Spectrosc.* **45**:209-238 (2004).
64. L. H. Lucas, M. A. Cerny, Y. M. Koen, R. P. Hanzlik, C. K. Larive, <sup>1</sup>H High-Resolution Magic Angle Spinning (HR-MAS) Analysis of Ligand Density on Resins using a Resin Internal Standard, *Anal. Bioanal. Chem.* **380**:627-631(2004).
65. L. H. Lucas, K. E. Price, C. K. Larive, Ternary Complex Formation of Human Serum Albumin with Two Drug Site II Ligands Revealed by NMR Diffusion and NOE Spectroscopy, *J. Am. Chem. Soc.* **126**:14258-14266, (2004).
66. L. H. Lucas, C. K. Larive, Quantitative Analysis in Organic Synthesis with NMR, In *Analysis and Purification Methods in Combinatorial Chemistry*, B. Yang, Ed. Wiley Interscience, Hoboken, N. J., 2004 pp 3-36.
67. L. A. Cardoza, C.W. Knapp, C.K. Larive, J.B. Belden, M. Lydy, D.W. Graham, Factors Affecting the Fate of Ciprofloxacin in Aquatic Field Systems, *Water, Soil, and Air Pollution*, **161**:383-398 (2005).
68. K. F. Morris, B. A. Becker, J. Tarus, V. K. Almeida, A. L. Froberg, C. K. Larive, Using NMR Spectroscopy to Develop Insights into the Intermolecular Interactions Underlying Electrokinetic Chromatography, *Anal. Chem.* **77**:254 A–263 A (2005).
69. K. E. Price, S. S. Vandaveer, C. E. Lunte, C. K. Larive, Tissue Targeted Metabonomics: Metabolic Profiling by Microdialysis Sampling and Microcoil NMR, *J. Pharm. Biomed. Anal.* **38**:904-909 (2005).
70. L. H. Lucas, C. K. Larive, P. S. Wilkinson, S. Huhn, Progress Toward Automated Metabolic Profiling of Human Serum: Comparison of CPMG and Gradient-Filtered NMR Analytical Methods, *J. Pharm. Biomed. Anal.* **39**:156-163 (2005).
71. L. H. Lucas, S. F. Wilson, C. E. Lunte, C. K. Larive, Drug Profiling in Rat Tissue by High-Resolution Magic Angle Spinning (HR-MAS) NMR Spectroscopy, *Anal. Chem.* **77**:2978-2984 (2005).
72. H. J. Kim, N. Galeva, C. K. Larive, M. Alterman, D. W. Graham, Purification and Physical-Chemical Properties of Methanobactin: A Chalkophore from *Methylosinus trichosporium* OB3b, *Biochemistry* **44**:5140-5148 (2005).
73. V. K. Almeida, C. K. Larive, Insights into Cyclodextrin Interactions during Sample Stacking using Capillary Isotachopheresis with On-Line Microcoil NMR Detection, *Magn. Reson. Chem.* **43**:755-761 (2005).
74. A. K. Korir, V. K. Almeida, D. S. Malkin, C. K. Larive, Separation and Analysis of Nanomole Quantities of Oligosaccharides using On-line Capillary Isotachopheresis Coupled with NMR Detection, *Anal. Chem.* **77**:5998-6003 (2005).

75. W. Knapp, L.A. Cardoza, J.N. Hawes, E.M.H. Wellington, C.K. Larive, D.W. Graham, Fate and Effects of Enrofloxacin in Aquatic Systems under Different Light Conditions, *Environ. Sci. Technol.* **39**:9140-9146 (2005).
76. B. A. Becker, K. F. Morris, C. K. Larive, An Improved Method for Suppressing Protein Background in PFG NMR Experiments to Determine Ligand Diffusion Coefficients in the Presence of Receptor, *J. Magn. Reson.* **181**:327-330 (2006).
77. K. F. Morris, B. A. Becker, B. C. Valle, I. M. Warner, C. K. Larive, Use of NMR Binding Interaction Mapping Techniques to Examine Interactions of Chiral Analytes with Molecular Micelles, *J. Phys. Chem. B.* **110**:17359-17369 (2006).
78. A. Lebrón-Paler, J. E. Pemberton, B.A. Becker, W. H. Otto, C. K. Larive, R. M. Maier, Determination of the Acid Dissociation Constant of the Biosurfactant Monorhamnolipid in Aqueous Solution by Potentiometric and Spectroscopic Methods, *Anal. Chem.* **78**:7649-7658 (2006).
79. A. K. Korir, V. K. Almeida, C. K. Larive, Visualizing Ion Electromigration during Isotachophoretic Separation with cITP-NMR, *Anal. Chem.* **78**:7078-7087 (2006).
80. B. C. Valle, K. F. Morris, K. A. Fletcher, V. Fernand, D. M. Sword, S. Eldridge, C. K. Larive, I. M. Warner, Understanding Chiral Molecular Micellar Separations Using Steady-State Fluorescence Anisotropy, Capillary Electrophoresis, and NMR, *Langmuir* **23**:425-435 (2007).
81. A. K. Korir, C. K. Larive, On-line NMR Detection of Microgram Quantities of Heparin-Derived Oligosaccharides and their Structure Elucidation by Microcoil NMR, *Anal. Bioanal. Chem.* **388**:1707-1716 (2007).
82. Y. Zhao, T. F. Chow, R. S. Puckrin, S. E. Alfred, A. K. Korir, C. K. Larive S. R. Cutler, Chemical Genetic Interrogation of Natural Variation Uncovers a Molecule that is Glyco-Activated, *Nature Chem. Biol.* **3**:716-721 (2007).
83. S. L. Eldridge, V. K. Almeida, A. K. Korir, C. K. Larive, Separation and Analysis of Trace Degradants in a Pharmaceutical Formulation Using On-Line cITP-NMR, *Anal. Chem.* **79**:8446-8453 (2007).
84. M. Rojas-Pierce, B. Titapiwatanakun, E. J. Sohn, F. Fang, C. K. Larive, J. Blakeslee, Y. Cheng, S. Cutler, W. A. Peer, A. S. Murphy, Natasha V. Raikhel, Arabidopsis P-Glycoprotein19 Participates in the Inhibition of Gravitropism by Gravacin, *Chem. Biol.* **14**:1366-1376 (2007).
85. K. E. Price, C. E. Lunte, C. K. Larive, Development of Tissue-Targeted Metabonomics: Part 1. Analytical Considerations, *J. Pharm. Biomed. Anal.* **46**:737-747 (2008)
86. A. K. Korir, J. F. K. Limtiaco, S. M. Gutierrez, C. K. Larive, Ultraperformance Ion-Pair Liquid Chromatography Coupled to Electrospray Time-of-Flight Mass Spectrometry for Compositional Profiling and Quantification of Heparin and Heparan Sulfate, *Anal. Chem.* **80**:1297-1306 (2008).
87. J. Cruz, B. A. Becker, K. F. Morris, C. K. Larive, NMR Characterization of the Host-guest Inclusion Complex between  $\beta$ -cyclodextrin and Doxepin, *Mag. Res. Chem.* **46**:838-845 (2008).
88. S. L. Eldridge, A. K. Korir, S. M. Gutierrez, F. Campos, J. F. Limtiaco, C. K. Larive, Heterogeneity of depolymerized heparin SEC fractions: To pool or not to pool? *Carbohydrate Res.* **343**:2963-2970 (2008).
89. B.A. Becker, C. K. Larive, Probing the Binding of Propranolol Enantiomers to  $\alpha_1$ -Acid Glycoprotein with Ligand-detected NMR Experiments, *J. Phys. Chem. B.* **112**:13581-13587 (2008).
90. C. Branco-Price, K. A. Kaiser, C. J. H. Jang, C. K. Larive, J. Bailey-Serres, Selective mRNA Translation Coordinates Energetic and Metabolic Adjustments to Hypoxia and Reoxygenation in *Arabidopsis thaliana*, *Plant J.* **56**:743-755 (2008).
91. S. L. Eldridge, A. K. Korir, C. E. Merrywell, C. K. Larive, Hyphenated Chromatographic Techniques in Nuclear Magnetic Resonance Spectroscopy, in *Advances in Chromatography*, volume 46, E. Grushka and N. Grinberg, Eds., CRC Press, 2008, 351-390.
92. K. A. Kaiser, C. E. Merrywell, F. Fang, C. K. Larive, Metabolic Profiling, in *NMR Spectroscopy in Pharmaceutical Analysis* U. Holzgrabe, I. Wawer, B. Diehl, Eds. Elsevier, 2008, 233-267.
93. A. K. Korir, C. K. Larive, Online Capillary Isotachophoresis Coupled with NMR Detection for Characterization of Pharmaceutical Trace Impurities and Heparin-derived Oligosaccharides, *Lab Plus International* April/May 15-20 (2008).
94. A. K. Korir, C. K. Larive, Advances in the Separation, Sensitive Detection and Characterization of Heparin and Heparan Sulfate, *Anal. Bioanal. Chem.* **393**:155-169 (2009).

95. K. E. Price, C. K. Larive, C. E. Lunte, Tissue-Targeted Metabonomics: Biological Considerations and Application to Doxorubicin-Induced Hepatic Oxidative Stress, *Metabolomics*, **5**:219-228 (2009).
96. K. A. Kaiser, G. Barding, C. K. Larive, A Comparison of Metabolite Extraction Strategies for <sup>1</sup>H-NMR-based Metabolic Profiling using Mature Leaf Tissue from the Model Plant *Arabidopsis thaliana*, *Magn. Res. Chem.* **47**:S147-S156 (2009).
97. M. Nillos, S. Qin, C. Larive, D. Schlenk, J. Gan, Epimerization of Cypermethrin Stereoisomers in Alcohols, *J. Ag. Food Chem.* **57**:6938-6943 (2009).
98. S. L. Eldridge, L. A. Higgins, B. J. Dickey, C.K. Larive, Insights into the Capillary Electrophoresis Separation of Heparin Disaccharides from NMR pK<sub>a</sub> and Electrophoretic Mobility Measurements, *Anal. Chem.* **81**:7406-7415 (2009).
99. J. F. K. Limtiaco, C. J. Jones, C. K. Larive, Characterization of Heparin Impurities with HPLC-NMR using Weak Anion Exchange Chromatography, *Anal. Chem.* **81**:10116-10123 (2009).
100. C. J. Jones, N. Membreno, C. K. Larive, Insights into the Mechanism of Separation of Heparin and Heparan Sulfate Disaccharides by Reverse-Phase Ion-Pairing Chromatography, *J. Chromatogr. A.* **1217**:479-488 (2010).
101. S. Beni, J.F. K. Limtiaco, C. K. Larive, Analysis and Characterization of Heparin Impurities, *Anal. Bioanal. Chem.* **399**:527-539 (2011).
102. J.F.K. Limtiaco, S. Beni, C.J. Jones, D. J. Langeslay, C. K. Larive, NMR Methods to Monitor the Enzymatic Depolymerization of Heparin, *Anal. Bioanal. Chem.* **399**:593-603 (2011).
103. J.F.K. Limtiaco, D. J. Langeslay, S. Beni, C.K. Larive, Getting to Know the Nitrogen Next Door: HNMR Measurements of Amino Sugars, *J. Magn. Reson.* **209**:323-331 (2011).
104. J. D. Kim, K. Kaiser, C. K. Larive, K.A. Borkovich, Use of <sup>1</sup>H NMR to Measure Intracellular Metabolite Levels During Growth and Asexual Sporulation in *Neurospora crassa*, *Eukaryotic Cell* **10**:820-831 (2011).
105. J.F.K. Limtiaco, S. Beni, C.J. Jones, D. J. Langeslay, C.K. Larive, The Efficient Structure Elucidation of Minor Components in Heparin Digests using Microcoil NMR, *Carbohydrate Res.* **346**: 2244-2254 (2011).
106. C.J. Jones, S. Beni, C. K. Larive, Understanding the Reverse-phase Ion-pair HPLC Resolution of Heparin-Related Saccharide Anomers, *Anal. Chem.* **83**:6762-6769 (2011).
107. A.M. Johnson, O. Moshe, A.S. Gamboa, B. W. Langloss, J.F. K. Limtiaco, C.K. Larive, R.J. Hooley, Synthesis and Properties of Metal-Ligand Complexes with Endohedral Amine Functionality, *Inorg. Chem.* **50**:9430-9442 (2011).
108. D. J. Langeslay, S. Beni, C. K. Larive, Detection of the <sup>1</sup>H and <sup>15</sup>N NMR Resonances of Sulfamate Groups in Aqueous Solution – a New Tool for Heparin and Heparan Sulfate Characterization, *Anal. Chem.* **83**:8006-8010 (2011).
109. C.J. Jones, S. Beni, J.F.K. Limtiaco, C.K. Larive, Heparin Characterization: Challenges and Solutions, *Annual Review of Analytical Chemistry*, **4**:439-465 (2011)
110. C.J. Jones, C. K. Larive, Cracking the Proteoglycan Code, *Nature Chemical Biology* **7**:758-759 (2011)
111. G. A. Barding, Jr., D. J. Orr, C.K. Larive, Plant Metabolomics, in *Encyclopedia of Magnetic Resonance*, Eds R. K. Harris and R. E. Wasylshen, John Wiley: Chichester. DOI: 10.1002/9780470034590.emrstm1267. Published 15<sup>th</sup> December 2011.
112. C.J. Jones, C. K. Larive, Could Smaller Really be Better? Current and Future Trends in Microcoil NMR, *Anal. Bioanal. Chem.* **402**:61-68 (2012).
113. J. R. Cruz, C. K. Larive, Determination of the Binding Epitope of Lidocaine with AGP: Minimizing the Effects of Nonspecific Binding in Saturation Transfer Difference Experiments, *Anal. Bioanal. Chem.* **402**:337-347 (2012).
114. G. A. Barding, Jr., T. Fukao, S. Beni, J. Bailey-Serres, C. K. Larive, Differential Metabolic Regulation Governed by the Rice *SUB1A* Gene during Submergence Stress and Identification of Alanylglycine by <sup>1</sup>H NMR Spectroscopy, *J. Proteome Res.* **11**:320-330 (2012).
115. J.F.K. Limtiaco, C.J. Jones, C. K. Larive, Diffusion-edited NMR Spectra of Heparin Contaminants, *Anal. Methods*, **4**:1168-1172 (2012).
116. D. J. Langeslay, S. Beni, C.K. Larive, A Closer Look at the Nitrogen Next Door: <sup>1</sup>H-<sup>15</sup>N NMR Methods for Glycosaminoglycan Structural Characterization, *J. Magn. Reson.* **216**:169-174 (2012).

117. D.N. Bulloch, R. Lavado, K. L. Forsgren, S. Beni, D. Schlenk, C.K. Larive, Analytical and Biological Characterization of Halogenated Gemfibrozil Produced through Chlorination of Wastewater, *Environ. Sci. Tech.* **46**:5583-5589 (2012).
118. D. J. Langeslay, R. P. Young, S. Beni, C. N. Beecher, L. J. Mueller, C. K. Larive, Sulfamate Proton Solvent Exchange in Heparin Oligosaccharides – Evidence for a Persistent Hydrogen Bond in the Antithrombin-binding Pentasaccharide Arixtra, *Glycobiology* **9**:1173-1182 (2012).
119. G. A. Barding, Jr., R. Salditos, C. K. Larive, Quantitative NMR for Bioanalysis and Metabolomics, *Anal. Bioanal. Chem.* **404**:1165-1179 (2012).
120. C. J. Jones, C. K. Larive, Microcoil NMR Study of the Interactions between Doxepin,  $\beta$ -Cyclodextrin, and Acetate during Capillary Isotachopheresis, *Anal. Chem.* **84**:7099-7106 (2012).
121. D. Langeslay, C.J. Jones, S. Beni, C. K. Larive, Glycosaminoglycans: Oligosaccharide Analysis by Liquid Chromatography/Specific Labeling, in Proteoglycans – Methods and Protocols, *Methods Mol. Biol.*, **836(2)**:131-144, 2012.
122. G. A. Barding, Jr., T. Fukao, S. Beni, J. Bailey-Serres, C. K. Larive, Comparison of GC-MS and NMR for Metabolite Profiling of Rice Subjected to Submergence Stress, *J. Proteome Res.* **12**:898-909 (2013).
123. D. J. Langeslay, C.N. Beecher, A. Naggi, M. Guerrini, G. Torri, C. K. Larive, Characterizing the Microstructure of Heparin and Heparan Sulfate using  $^1\text{H}$  and  $^{15}\text{N}$  NMR Chemical Shift Analysis, *Anal. Chem.* **85**:1247-1255 (2013).
124. D. J. Langeslay, E. Urso, C. Gardini, A. Naggi, G. Torri, C. K. Larive, Reverse-phase Ion-pair UPLC-MS for Fingerprinting Low-Molecular-Weight Heparins, *J. Chromatogr. A.* **1292**:201-210 (2013).
125. M. Kraszni, A. Marosi, C. K. Larive, NMR Resonance Assignments and the Acid-Base Characterization of the Pomegranate Ellagitannin Punicalagin, *Anal. Bioanal. Chem.* **405**:5807-5816 (2013).
126. G.A. Barding, D.J. Orr, S. Sathnur, C.K. Larive, VIZR – An Automated Chemometric Tool for Metabolic Profiling, *Anal. Bioanal. Chem.* **405**:8409-8417 (2013).
127. R.D Gorham Jr., D.L. Forest, P. Tamamis, A. López de Victoria, M. Kraszni, C.A. Kieslich, C.D. Banna, M.L. Bellows-Peterson, C.K. Larive, C.A. Floudas, G. Archontis, L. V Johnson, D. Morikis, Novel Compstatin Family Peptides Inhibit Complement Activation by Drusen-Like Deposits in Human Retinal Pigmented Epithelial Cell Cultures, *Exp. Eye Res.* **116**:96-108 (2013).
128. H. van Veen, A. Mustroph, G. A. Barding, M. Vergeer-van Eijk, R. A. M. Welschen-Evertman, O. Pedersen, E. J. W. Visser, C. K. Larive, R. Pierik, J. Bailey-Serres, L. A.C.J. Voeselek, R. Sasidharan, Two Wild Plant Species Regulate Flooding Survival through Distinct Mechanisms, *Plant Cell* **25**:4691-4707 (2013).
129. J. V. Sweedler, C. K. Larive, Celebrating the 75<sup>th</sup> Anniversary of the ACS Division of Analytical Chemistry – A Special Collection of the Most Highly Cited Analytical Chemistry Papers Published Between 1938 and 2012, *Anal. Chem.* **85**:4201-4202 (2013).
130. D. J. Langeslay, C.N. Beecher, M. M. Dinges, C. K. Larive, Glycosaminoglycan Structural Characterization, in *Encyclopedia of Magnetic Resonance*, Eds R. K. Harris and R. E. Wasylshen, John Wiley: Chichester, DOI: 10.1002/9780470034590.emrstm1316. Published Online: 6/17/2013.
131. K. Mazák, C.N. Beecher, M. Kraszni, C. K. Larive, The Interaction of Enoxaparin and Arixtra with Calcium, *Carbohydr. Res.* **384**:13-19 (2014).
132. C. N. Beecher, R. P. Young, D. J. Langeslay, L. J. Mueller, C. K. Larive, Hydroxyl Proton Hydrogen Bonding in the Heparin Oligosaccharide Arixtra in Aqueous Solution, *J. Phys. Chem. B.* **118**:482-491 (2014).
133. A. Mustroph, G.A. Barding, Jr., K. Kaiser, C. K. Larive, J. Bailey-Serres, Characterization of Distinct Root and Shoot Responses to Low-oxygen Stress in Arabidopsis with a Focus on Primary C- and N-Metabolism, *Plant, Cell Environ.* **25**:4691-4707 (2014).
134. M.M. Dinges, K. Solakyildirim, C.K. Larive, Affinity Capillary Electrophoresis for the Determination of Binding Affinities for Low Molecular Weight Heparins and Antithrombin-III, *Electrophoresis* **36**:1469-1477 (2014).
135. K. Solakyildirim, D.N. Bulloch, C. K. Larive,  $^1\text{H}$  and  $^{13}\text{C}$  NMR Spectral Assignments of Halogenated Transformation Products of Pharmaceuticals and Related Environmental Contaminants, *Magn. Reson. Chem.* **52**:310-317 (2014).



136. Y.-J. Ghang, L. Perez, M.A. Morgan, F. Si, O.M. Hamdy, C.N. Beecher, C.K. Larive, R.R. Julian, W. Zhong, Q. Cheng, R. J. Hooley, Anionic Deep Cavitands Enable the Adhesion of Unmodified Functional Proteins at a Membrane Bilayer, *Soft Matter* **10**(48):9651-9656 (2014).
137. D. J. Orr, G. A. Barding, Jr. C. E. Merrywell, G. R. Hicks, N. V. Raikhel, C. K. Larive, <sup>1</sup>H NMR Based Metabolomics Methods for Chemical Genomics Experiments, in Plant Chemical Genomics *Methods Mol. Biol.* **1056**:225-239 (2014).
138. R.D. Gorham, Jr., D.L. Forest, G.A. Khoury, J. Smadbeck, C.N. Beecher, E.D. Healy, P. Tamamis, G. Archontis, C.K. Larive, C. A. Floudas, M. J. Radeke, L.V. Johnson, D. Morikis, New Compstatin Peptides Containing *N*-terminal Extensions and Non-natural Amino Acids Exhibit Potent Complement Inhibition and Improved Solubility Characteristics, *J. Med. Chem.* **58**:814-826 (2015).
139. D.N. Bulloch, E.D. Nelson, S. A. Carr, C. R. Wissman, J. L. Armstrong, D. N. Schlenk, C. K. Larive, Occurrence of Halogenated Transformation Products of Selected Pharmaceuticals and Personal Care Products in Secondary and Tertiary Treated Wastewaters from Southern California, *Environ. Sci. Technol.* **49**:2044-2051 (2015).
140. C. K. Larive, G.A. Barding, Jr., M.M. Dinges, NMR Spectroscopy for Metabolomics and Metabolite Profiling, *Anal. Chem.* **87**:133-146 (2015).
141. C.N. Beecher, C.K. Larive, Methods for Measuring Exchangeable Protons in Glycosaminoglycans. *Methods in Molecular Biology*. Editors: Kuberan Balargurunathan, Hiroshi Nakato, Umesh Desai. Springer, N.Y. **1229**:173-187 (2015).
142. S. Ouyang, C. N. Beecher, K. Wang, C. K. Larive, K. Borkovich, Metabolic Impacts of using Nitrogen and Copper-regulated Promoters to Regulate Gene Expression in *Neurospora crassa*, *G3: Genes, Genomes, Genetics* **5**(9):1899-1908 (2015).
143. C. N. Beecher, C. K. Larive, <sup>1</sup>H and <sup>15</sup>N NMR Characterization of the Amino Groups of Heparan Sulfate Related Glucosamine Monosaccharides in Aqueous Solution, *Anal. Chem.* **87**:6842-6848 (2015).
144. K. Wang, G.A. Barding, Jr., C.K. Larive, Peak Alignment of One-Dimensional NMR Spectra by Means of an Intensity Fluctuation Frequency Difference (IFFD) Segment-Wise Algorithm, *Anal. Methods* **7**(22):9673-9682 (2015).
145. R. P. Young, B. G. Caulkins, D.N. Bulloch, C.K. Larive, M.F. Dunn, L. J. Mueller, Solution-State <sup>17</sup>O Quadrupole Central Transition NMR Spectroscopy in the Enzyme Active Site of Tryptophan Synthase, *Angew. Chemie* **55**:1350-1354 (2016).
146. C. N. Beecher, M. S. Manighalam, A. F. Nwachuku, C. K. Larive, Screening Enoxaparin Tetrasaccharides SEC Fractions for 3-*O*-Sulfo-*N*-Sulfoglucosamine Residues using [<sup>1</sup>H,<sup>15</sup>N] HSQC NMR, *Anal. Bioanal. Chem.* **408**(6): 1545-1555 (2016).
147. J. M. Chater, C. Mathon, C.K. Larive, D. J. Merhaut, L.W. Tinoco, J. E. Preece, Juice Quality Parameters and <sup>1</sup>H NMR-quantified Metabolites of 14 Pomegranate Cultivars, *Food Chemistry*, submitted, 11/15/2016, in revision.
148. C. Mathon, G. A. Barding, Jr. Separation of Ten Phosphorylated Mono- and Disaccharides using HILIC and Ion-pairing Interactions, *Anal. Chim. Acta*, submitted 1/24/2017, in revision.

#### **Education Articles and Commentary**

1. C. K. Larive "Analytical Approaches for Teaching Analytical Science" *Anal. Bioanal. Chem.* **378**:1399-1400 (2004).
2. C. K. Larive "Digital Resources to Enhance Instruction" *Anal. Bioanal. Chem.* **379**:321-322 (2004).
3. C. K. Larive "Problem-Based Learning in the Analytical Chemistry Laboratory Course" *Anal. Bioanal. Chem.* **380**:357-359 (2004).
4. C. K. Larive "Graduate Student Internships: Developing Scientists with Real-world Experiences" *Anal. Bioanal. Chem.* **381**:993-995(2005).
5. C. K. Larive "Instruction in Bioanalytical Chemistry" *Anal. Bioanal. Chem.* **382**:855-856 (2005).
6. C. K. Larive, E. Bulska "Tips for Effective Poster Presentations" *Anal. Bioanal. Chem.* **385**:1347-1349 (2006).
7. C. K. Larive "Revising the Quantitative Analysis Laboratory – What to Keep? What to Change?" *Anal. Bioanal. Chem.* **386**:1191-1194 (2006).

8. C. K. Larive "A Picture is Worth a Thousand Words: Animations and Simulations in the Teaching of Analytical Science" *Anal. Bioanal. Chem.* **390**: 71-75 (2008).
9. W. F. Polik and C. K. Larive "New ACS Guidelines Approved by CPT" *J. Chem. Ed.* **85**:484-487 (2008).
10. C.K. Larive "The Art of Mentoring Scientists" *ACS Graduate Education Newsletter*, **7**(2):15-16 (2008).
11. C. K. Larive "Quantitative NMR: eLearning Module" *Journal of the Analytical Sciences Digital Library*, <http://www.asdlib.org/onlineArticles/ecourseware/Larive/qnmr1.htm> 9/1/2008.
12. W.F. Polik and C. K. Larive "New ACS Guidelines for Chemistry Programs" *Chemical and Engineering News* **86**:46 (2008).
13. C.K. Larive "The Analytical Sciences Digital Library" *Anal. Bioanal. Chem.* **395**:2425-2428 (2009).
14. C.K. Larive, L.Y. Park "Who is Training the Chemists of Tomorrow?" *Chemical and Engineering News*, **88**(42):35 (2010).
15. S. Harris, L. Y. Park, C. K. Larive "Committee Report: ACS CPT Fall 2009 Faculty Status Survey" *J. Chem. Ed.*, **88**:11-13 (2011).
16. R.S. Kelly, C.K. Larive "The Analytical Sciences Digital Library: Your Online Resource for Teaching Instrumentation" *J. Chem. Ed.* **88**:375-377 (2011).
17. C. Larive "Preparation for Graduate School Starts Now" *In Chemistry – The magazine for ACS student members*, Sept./Oct. 2011, page 2.
18. M. K. Carroll, C. K. Larive "Chemistry and the Premedical Curriculum" *Chemical and Engineering News*, **89**(42):65 (2011).
19. T. Wenzel, C. K. Larive, K. Frederick "Role of Undergraduate Research in an Excellent and Rigorous Undergraduate Chemistry Curriculum" *J. Chem. Ed.* **89**:7-9 (2012).
20. C.K. Larive, A.B. McCoy "Evolution of the ACS Guidelines for Bachelor's Degree Programs" *Chemical and Engineering News*, **90**(1):29 (2012).
21. C.K. Larive "Internet-based Analytical Chemistry Teaching Resources" Point of View article *Brazilian Journal of Analytical Chemistry*, **1**(7):XXIII (Jan/Feb/Mar 2012).
22. T. Kuwana, C. K. Larive "Active Learning with the Analytical Sciences Digital Library" *Bunseki Kagaku (Japan Analyst)* **8**:468 (2012).
23. H.A. Bullen, A. Fitch, R.S. Kelly, C.K. Larive "Environmental Analysis – Lake Nakuru Flamingos: Introduction" <http://community.asdlib.org/activelearningmaterials/environmental-analysis-lake-nakuru-flamingos-introduction/> (2013).
24. H.A. Bullen, A. Fitch, R.S. Kelly, C.K. Larive "Environmental Analysis – Lake Nakuru Flamingos: Pesticides" <http://community.asdlib.org/activelearningmaterials/environmental-analysis-lake-nakuru-flamingos/> (2013).
25. E. Gross, R.S. Kelly, C.K. Larive "Environmental Analysis – Lake Nakuru Flamingos: Heavy Metals" <http://community.asdlib.org/activelearningmaterials/nakuru-heavy-metals/> (2013).
26. C. K. Larive "Happy New Year – renewal, welcome and farewell" *Anal. Bioanal. Chem.* **405**:3-5 (2013).
27. T. J. Wenzel, C. K. Larive "The Analytical Sciences Digital Library: A Resource to Promote Active Learning" *Reviews in Analytical Chemistry*, **33**(1):1-9 (2014).

#### **Invited Lectures (since 2005)**

*Microcoil NMR: Application to On-line Capillary Separations and Metabonomics Studies*, University of North Florida, Jacksonville, FL, 2/26/2005.

*Application of HPLC-NMR, HPLC-MS and MS/MS to Investigate the Environmental Fate of Fluoroquinolone Antibiotics*, UC Riverside ETOX seminar, 3/30/2005.

*Microcoil NMR: Application to On-line Capillary Separations and Metabonomics Studies*, CSU San Bernardino, CA, 4/28/2005.

*Tissue Targeted Metabonomics Studies of Cardiac Oxidative Stress*, CSU Northridge, 10/19/2005

*Application of HPLC-NMR, HPLC-MS and MS/MS to Investigate the Environmental Fate of Fluoroquinolone Antibiotics*, Pomona College, Claremont College Consortium, 10/24/2005.

*Metabolic profiling with Nuclear Magnetic Resonance*, Department of Radiology, Loma Linda University Medical Center, 11/1/2006.

*Microcoil NMR probes and their use for On-line Capillary Isotachopheresis-NMR*, Department of Chemistry, San Jose State University, 11/14/2006.

*Metabonomics: A Discovery-based Approach to Unraveling Physiology*, Department of Chemistry and Biochemistry, CSU Los Angeles, 2/16/2007.

*Metabonomics: A Discovery-based Approach to Unraveling Physiology*, Department of Chemistry and Biochemistry, Alcorn State University, Lorman, MS, 3/29/2007.

*Development and Application of Microcoil NMR*, Jackson State University, Jackson, MS, 3/30/2007.

*Probing Protein-Ligand Interactions with Ligand-Detected NMR Experiments*, UCR Chemical Genomics IGERT Retreat, Warner Springs Ranch, 11/04/2007.

*Probing Protein-Ligand Interactions with Ligand-Detected NMR Experiments*, UCR Biochemistry Department Seminar, 11/20/2007.

*Finding a Needle in a Haystack: Improving the Analytical Methods for Heparin Characterization*, IUPUI, Indianapolis, IN 2/20/2008.

*Pharmaceutical and Biochemical Microanalysis using Microcoil NMR and Mass Spectrometry*, Procter and Gamble, Cincinnati, OH, 2/21/2008.

*Finding a Needle in a Haystack: Improving the Analytical Methods for Heparin Characterization*, University of Northern Kentucky, Highland Heights, KY, 2/21/2008.

*Characterization of Heparin-derived Oligosaccharides*, Schering-Plough, Oss, Netherlands, 9/1/2008.

*Characterization of Heparin-derived Oligosaccharides*, Semmelweis University, Budapest, Hungary, 9/3/2008.

*Drivers and Roadmaps for Improving the Undergraduate Chemistry Experience*, University of Pittsburgh, PA, 9/25/2008.

*Finding a Needle in a Haystack: New Analytical Approaches for Characterizing Glycosaminoglycans*, University of Pittsburgh, PA, 9/26/2008.

*Metabonomics: A Discovery-based Approach to Unraveling Physiology*, University of Redlands, CA, 10/28/2008.

*A Twisted Path makes for an Interesting Journey* Los Angeles and Ventura County AWIS, Amgen, Thousand Oaks, CA, 1/21/2009.

*Introduction to the New ACS Guidelines*, San Geronio Local ACS Section, Riverside, CA, 3/17/2009.

*Finding a Needle in a Haystack: Improving the Analytical Methods for Heparin and Heparan Sulfate Characterization*, University of Arkansas, Fayetteville, AR, 4/20/2009.

*A Twisted Path makes for an Interesting Journey*, Women in STEM Lecture Series, UCR, 4/21/2009.

*New Analytical Methods for Heparin Characterization*, Indiana University, Bloomington, IN, 9/22/2009.

*Finding a Needle in a Haystack: Improving the Analytical Methods for Heparin Characterization*, University of Colorado – Colorado Springs, 10/23/2009.

*Finding a Needle in a Haystack: Improving Methods for Heparin Characterization*, California Institute of Technology, 11/2/2009.

*Finding a Needle in a Haystack: Improving Methods for Heparin Characterization*, Baxter Healthcare Corporation, Chicago, IL, 11/6/2009.

*Finding a Needle in a Haystack: Improving Methods for Heparin Characterization*, Cal Poly Pomona, CA, 12/3/2009.

*Finding a Needle in a Haystack: Improving Methods for Heparin Characterization*, NIST, 5/6/2010.

*Metabonomics: A Discovery-based Approach to Unraveling Physiology*, Center for Human Nutrition, UCLA. 5/21/2010.

*Finding a Needle in a Haystack: Improving Methods for Heparin Characterization*, Chemistry Department, San Diego State University, 9/17/2010.

*Applying to and Choosing a Graduate Program: A Roadmap for Success*, MARC Scholars, San Diego State University, 9/17/2010.

*A Twisted Path Makes for an Interesting Journey*, Biomedical Seminar, UCR 10/11/2010.

*Finding a Needle in a Haystack: Improving Methods for Heparin Characterization*, Chemistry Department, Brigham Young University, Provo, UT, 3/7/2011.

*Characterization of Heparin and Its Impurities*, Semmelweis University, Department of Pharmaceutical Chemistry, Budapest, Hungary, 5/16/2011.

*Finding a Needle in a Haystack – New Analytical Methods for Heparin Characterization*, Department of Chemistry and Biochemistry, CSU San Bernardino, CA, 10/20/2011.

*Finding a Needle in a Haystack – Improving Methods for Heparin Characterization*, Department of Chemistry and Biochemistry, San Jose State University, San Jose, CA 12/06/2011.

*Online Separations with NMR Detection*, G. Ronzoni Institute for Chemical and Biochemical Research, Milan, Italy, 2/14/2012.

*Heparin Characterization by <sup>1</sup>H and <sup>15</sup>N NMR Spectroscopy*, Semmelweis University College of Pharmacy, Budapest, Hungary, 4/23/2012.

*Metabonomics: A Discovery-based Approach to Understand Physiology*, Department of Chemistry, Harvey Mudd College, Claremont, CA, 11/06/2012.

*Probing Heparin Structure through NMR Measurements of Exchangeable Protons*, Department of Chemistry, University of Alberta, Edmonton, Alberta, Canada, 5/14/2014.

*Probing Heparin Structure through NMR Measurements of Exchangeable Protons*, Department of Pharmaceutical Chemistry, Semmelweis University, Budapest, Hungary 7/8/2014.

*Identifying Hydrogen Bonds in Sugars through NMR Measurements of Exchangeable Protons*, Department of Chemistry and Biochemistry, CSU Long Beach, CA, 2/25/2015.

*Identifying Hydrogen Bonds in Sugars through NMR Measurements of Exchangeable Protons*, Department of Chemistry and Biochemistry, University of Arizona, Tucson, AZ, 4/2/2015.

*Probing Heparin Structure through NMR Measurements of Exchangeable Protons*, Department of Chemistry, Miami University, Oxford, OH 5/5/2016.

#### **Invited Conference Presentations (since 2005)**

*NMR Diffusion Measurements for Mapping Binding Interactions*, 229<sup>th</sup> ACS National Meeting, San Diego, CA, 3/17/2005.

*Application of HPLC-NMR, HPLC-MS and MS/MS to Investigate the Environmental Fate of Fluoroquinolone Antibiotics*, COSMOS, Bristol, RI, 8/11/2005.

*Standing on the Shoulders of Giants: The Future of Analytical Chemistry Education*, Symposium honoring Frank Settle, 230<sup>th</sup> ACS National Meeting, 8/25/2005.

*Tissue Targeted Metabonomics Studies of Cardiac Oxidative Stress*, Smart Molecules for Therapy – Celebration of the Semi-Centennial of Semmelweis University, Budapest, Hungary, 10/12/2005.

*NMR Diffusion Measurements for Mapping Binding Interactions*, Bioanalytical Applications of NMR, Western Regional ACS Meeting, Anaheim, CA, 1/23/2006.

*Real-time Analysis with NMR: Promise and Challenges*, NSF Workshop on Biomeasurements, Tucson, AZ, 4/21/2006.

*Proposed ACS Guidelines for Course and Laboratory Curriculum: A CPT/Audience Dialog*, ACS National Meeting, 9/11/2006.

*Analytical Sciences Digital Library: What are Web-based Tools for Instruction in Environmental Chemistry*, ACS National Meeting, 9/13/2006.

*The Impact and Qualities of a Good Mentor: A Case Study*, ACS National Meeting, 9/13/2006.

*Visualizing Electromigration and Sample Stacking with On-line Capillary Isotachopheresis-NMR*, The Pittsburgh Conference on Analytical Chemistry, Chicago, IL, 2/28/2007.

*Probing Ligand Binding to Alpha-1 Acid Glycoprotein*, Experimental NMR Conference, Daytona Beach, FL, 4/22/2007.

*Metabonomics: A Discovery-based Approach to Unraveling Physiology*, Beckman Scholars Symposium, Irvine, CA, 7/27/2007.

*Standing on the Shoulders of Giants: One Woman's View of the Future of Analytical Chemistry Education*, Giddings Award Address, 234<sup>th</sup> ACS National Meeting, Boston, MA, 8/19/2007.

*Maintaining Work-life Balance*, New Faculty Conferee Networking Panel Discussion, The Pittsburgh Conference on Analytical Chemistry, New Orleans, LA, 3/3/2008.

*Revising the Quantitative Analysis Course: What to Keep? What to Change?* The Pittsburgh Conference on Analytical Chemistry, New Orleans, LA 3/6/2008.

*Undergraduate Research: The Ultimate Problem-based Learning Experience*, The Pittsburgh Conference on Analytical Chemistry, New Orleans, LA 3/6/2008.

*The Foundation Laboratory Experience*, 20th Biennial Conference on Chemical Education, 7/28/2008

*Instructional Approaches to Teaching Bioanalytical Chemistry*, 20th Biennial Conference on Chemical Education, 7/29/2008.

*Case Studies and Applying the ACS Guidelines to Real Curricular Situations*, 236<sup>th</sup> ACS meeting, Philadelphia, PA, 8/18/2008.

*NMR Characterization of Heparin-derived Oligosaccharides*, 236<sup>th</sup> National ACS meeting, Philadelphia, PA, 8/19/2008.

*Pharmaceutical and Biochemical Microanalysis using Microcoil NMR*, International Conference on LC-NMR and Related Techniques: Challenges in Biological Systems, Jena, Germany, 8/28/2008.

*Finding a Needle in a Haystack: Characterization of Heparin-Derived Oligosaccharides*, SACNAS Conference, Salt Lake City, UT, 10/10/2008.

*Ultrapformance Liquid Chromatography-Mass Spectrometry for Compositional Profiling and Quantification of Heparin and Heparan Sulfate*, NOBCCHE Regional Meeting, Cal Poly Pomona, CA, 10/11/2008.

*Transitioning from Graduate School – the Postdoc and Beyond*, YCC Symposium, 237<sup>th</sup> ACS National Meeting, Salt Lake City, UT, 3/23/2009.

*Finding a Needle in a Haystack: Pharmaceutical and Biochemical Microanalysis using Microcoil NMR*, Plenary Lecture, 3<sup>rd</sup> Iberoamerican NMR Meeting, Angra Dos Reis, Rio Janeiro, Brazil, 5/5/2009.

*Adventures in Mixture Analysis by NMR*, Keynote Presentation, Chicago Area NMR Discussion Group, Chicago, IL, 11/7/2009.

*Finding a Needle in a Haystack: Heparin Microanalysis*, LabAutomation 2010, Palm Springs, CA, 1/26/2010.

*Undergraduate Research – Developing Scientists and Building Mentors*, Pittsburgh Conference on Analytical Chemistry, Orlando, FL, 3/3/2010.

*Inquiry-based Learning: What Can We Learn about Teaching from Undergraduate Research?* 239<sup>th</sup> ACS National Meeting, San Francisco, CA, 3/22/2010.

*Student Excellence – What does it Mean?* 21st Biennial Conference on Chemical Education, Denton, TX, 8/3/2010.

*Strategies for Increasing Participation and Fostering Excellence*, 21st Biennial Conference on Chemical Education, Denton, TX, 8/3/2010.

*Student excellence – Where to next?* 21st Biennial Conference on Chemical Education, Denton, TX, 8/3/2010.

*Finding a Needle in a Haystack: Improving Analytical Methods for GAG Characterization*, 18<sup>th</sup> Symposium on Glycosaminoglycans, Villa Vigoni, Lake Como, Italy, 9/18/2010.

*A Metabolomic Approach to POM Juice Authenticity*, POM Research Summit, Beverley Hills, CA, 2/9/2011.

*Peer-reviewed, Open Access Electronic Resources for Analytical Science Education*, Pittsburgh Conference on Analytical Chemistry, Atlanta, GA, 3/17/2011.

*Adventures in Mixture Analysis by NMR*. Eli Lilly ACACC Grantees Symposium, Indianapolis, IN, 4/12/2011.

*The American Chemical Society Approval Program*, Plenary Lecture, European Chemistry and Chemical Engineering Education Network Meeting, Bratislava, Slovakia, 5/20/2011.

*Development of Contextual E-Learning Modules for Analytical Chemistry*. Gordon Conference on Chemical Education Research and Practice. Davidson, NC, 6/27/2011.

*Progress in Heparan Sulfate Characterization*, 19<sup>th</sup> Symposium on Glycosaminoglycans, Villa Vigoni, Lake Como, Italy, 9/24/2011.

*Active Learning Materials for Analytical Chemistry*, 16<sup>o</sup> Nacional de Quimica Analytica, Campos de Jordano, Rio de Janeiro, Brazil, 10/25/2011.

*The Analytical Sciences Digital Library: A Unifying Force for Analytical Science Education*, Pittsburgh Conference on Analytical Chemistry, Orlando, FL, 3/12/2012.

*Lake Nakuru Flamingos: A case study-based active learning project*, 243<sup>rd</sup> ACS National Meeting, San Diego, CA, 3/26/2012.

*NMR for the Characterization of Glycosaminoglycans, Proteoglycans* Gordon Research Conference, Procter Academy, Andover, NH, 7/10/2012.

*Metabolomics and Metabolic Profiling*, Partners in Discovery: City of Hope- UC Riverside Biomedical Research Initiative Workshop. City of Hope, Duarte, CA, 9/18/2012.

*Glycosaminoglycan Characterization by NMR*, Consortium for Functional Glycomics Symposium, Joint Meeting of the Society for Glycobiology and American Society for Matrix Biology, San Diego, CA, 11/11/2012.

*Faculty/Staff and Infrastructure Requirements of the ACS Guidelines*, 245<sup>th</sup> ACS National Meeting, New Orleans, LA, 4/8/2013.

*Analysis of Heparin Oligosaccharides using Anionic Capillary Isotachopheresis-NMR*, 245<sup>th</sup> ACS National Meeting, New Orleans, LA, 4/9/2013.

*Probing Heparin Structure through NMR Measurements of Exchangeable Protons*, Euromar 2013, Hersonissos, Crete, Greece, 7/2/2013.

*The Analytical Sciences Digital Library – An Online Portal for Teaching and Learning*, AACN Symposium, ASIANALYSIS XII, Fukuoka, Japan, 8/22/2013.

*Evaluation of Halogenated Pharmaceutical Transformation Products in Wastewater Effluent*, 29<sup>th</sup> Asilomar Conference on Mass Spectrometry, Asilomar, CA, 10/19/2013.

*The ACS Approval Process – A Preview of Coming Attractions*, Eastern Analytical Symposium, Somerset NJ, 11/20/2013.

*New Materials to Simulate Active Learning in the Chemistry Courses*, W.E. Harris Teaching Workshop, University of Alberta, Edmonton, Alberta Canada, 5/15/2014.

*Metabolite Profiling of the Rat Gut*, 250<sup>th</sup> ACS National Meeting, Boston, MA, 8/18/2015.

*ACS Volunteers – Planting the Seeds of a Better Tomorrow*, ChemLuminary Awards keynote address, 250<sup>th</sup> ACS National Meeting, Boston, MA, 8/18/2015.

*The Analytical Sciences Digital Library - An Electronic Resource Supporting Problem-based Learning*, Pacificchem, Honolulu, HI 12/16/2015.

*Environmental Metabolomics and Ecotoxicity Modeling using Earthworms*, Pacificchem, Honolulu, HI 12/18/2015.

*Southwestern Analytical Professors Conference (SWAP) Understanding Environmental Impacts through Metabolomics*, UC-Riverside, CA 1/29/2016.

*Analytical Approaches for Environmental Metabolomics and Ecotoxicity Modeling*, Pittsburgh Conference on Analytical Chemistry, Atlanta, GA 3/8/2016.

*Scaling Math Interventions: Adaptive Learning & Math Interventions at UCR*, University Innovation Alliance, University of Central Florida, Orlando, FL 10/19/2016.

## FUNDING HISTORY

### Pending Grants

**NIH R21** “*Delineating Intestinally Absorbed (Bioavailable) Microbial Metabolites by Metabolomic Profiling*”  
**Period:** 07/17– 06/19                      **Amount:** \$402,842  
**P.I.** C. Lytle                                      **Co-P.I.** C. Larive

### Current Funding

**APLU Urban Serving Universities** “*Community Engaged Learning in the Inland Empire*”  
**Period:** 01/17– 12/17                      **Amount:** \$50,000  
**P.I.** C. Larive

### Previous Funding

**NSF CHE-1213845 NSF** “*Enhancing the NMR Characterization of Amino Sugars*”  
**Period:** 09/12 – 08/16                      **Amount:** \$502,855 (includes supplement of \$56,598)  
**P.I.** C.K. Larive

**NSF ADVANCE HRD-1107245** “*Moving FORWARD for Women in STEM Fields at UC Riverside and Beyond*”  
**Period:** 07/11 – 06/16                      **Amount:** \$599,219  
**P.I.** Y. Moses                                      **Co-P.I.** C.K. Larive, S. Walker, M. Yates

**NSF TUES** "Development of E-Learning Modules for Analytical Chemistry"

**Period:** 07/11 – 06/16      **Amount:** \$600,000, \$57,588 to UC-Riverside

**P.I.** T. Wenzel (Bates)      **Co-P.I.** A. Fitch (Loyola-Chicago), C.K. Larive, (UC-Riverside), R.S. Kelly (East Stroudsburg University)

**USDA AFRI-2011-04015** "Molecular Dissection of Quiescence Mechanisms Conferred by the Submergence-1 Locus of Rice under Submergence and Drought"

**Period:** 04/12 – 03/15      **Amount:** \$500,000

**P.I.** J. Bailey-Serres      **Co-P.I.** T. Fukao, C.K. Larive

**NSF IOS-1121626** "Comparative Genome-scale Analyses of Submergence and Anaerobic Germination Mechanisms in Rice and Maize"

**Period:** 09/11 – 08/15      **Amount:** \$699,999

**P.I.** J. Bailey-Serres      **Co-P.I.** T. Fukao, C.K. Larive

**POM Wonderful** "Molecular Characterization of Pomegranate Juice"

**Period:** 01/12 – 12/13      **Amount:** \$150,000

**P.I.** C.K. Larive

**USDA NIFA Higher Education Challenge Grant 2011-38411-30552** "Using a Learning Community to Engage Freshman and Sophomores in the Agricultural Sciences: Enhancing Foundational STEM Instruction and Attracting Students to Agricultural Science Careers"

**Period:** 09/11 – 08/14      **Amount:** \$140,070

**P.I.** J. Eichler      **Co-P.I.** C. K. Larive, M. Yates

**NSF CHE-0848976** "Advancing cITP-NMR and Reverse-phase Ion-pairing Separations of Anionic Oligosaccharides"

**Period:** 07/09 – 06/12      **Amount:** \$420,000

**P.I.** C.K. Larive

**NSF CHE-0927382** "Enhancing REU Programs through a Meeting of Chemistry PIs"

**Period:** 08/09 – 07/11      **Amount:** \$79,548

**P.I.** C.K. Larive      **Co-P.I.** T. Hanks (Furman University)

**Cancer Research Coordinating Committee** "Impact of Glucuronic Acid Substitution on the Chemistry of Heparin-Derived Oligosaccharides"

**Period:** 07/11 – 06/12      **Amount:** \$50,000

**P.I.** C.K. Larive

**Mizutani Foundation for Glycoscience** "Advancing NMR Methods for Heparan Sulfate Characterization"

**Period:** 04/11 – 03/12      **Amount:** \$48,000

**P.I.** C.K. Larive

**NSF DUE-0817595** "Collaborative Research: Development of Contextual E-Learning Modules for Analytical Chemistry"

**Period:** 09/08 – 08/11      **Amount:** \$100,722 to UCR with an additional collaborative award

**P.I.** C.K. Larive      \$99,278 to Tom Wenzel, Bates College

**USDA/CSREES** "Elucidation of the Molecular Antagonism between Submergence1 Ethylene Response Factors during Submergence and Anaerobic Germination in Rice"

**Period:** 09/08 – 08/11      **Amount:** \$350,000

**P.I.** J. Bailey-Serres      **Co-P.I.** C.K. Larive, P. Ronald (UC-Davis)

**Pom Wonderful** "Molecular Fingerprinting of Pomegranate Juice – Pilot Project"

**Period:** 05/010 – 03/11      **Amount:** \$56,719  
**P.I.** C.K. Larive

**Baxter Healthcare Corporation** *“Heparin Characterization”*  
**Period:** 07/09 – 06/10      **Amount:** \$45,000  
**P.I.** C.K. Larive

**NSF CHE-0742001** *“Purchase of a GC-TOF Instrument for Cyberinfrastructure at UC Riverside”*  
**Period:** 02/08 – 01/11      **Amount:** \$315,735  
**P.I.** E. Chronister      **Co-P.I.** C.K. Larive

**NSF DUE-0531941** *“Collaborative Project: Assessing the User-base and Expanding the Usability/Reach of the Analytical Sciences Digital Library through Developmental Workshops”*  
**Period:** 08/01/04 - 09/1/10      **Amount:** \$585,115, Supplement \$34,900  
**P.I.** C.K. Larive      **Co-P.I.** T. Kuwana, S. E. Gauch, A. Scheeline

**ACS PRF** *“Determination of Ligand Binding Epitopes using NMR Diffusion Measurements”*  
**Period:** 05/01/05 – 08/31/09      **Amount:** \$80,000  
**P.I.** C.K. Larive

**NSF CHE-0616811** *“Development and Application of On-line cITP-NMR for Analysis of Mass-Limited Samples”*  
**Period:** 07/06 – 06/09      **Amount:** \$449,583  
**P.I.** C.K. Larive

**NSF CHE-0552493** *“REU Site: Interdisciplinary Research Experience in Bioanalytical Science”*  
**Period:** 03/2006 - 02/2009      **Amount:** \$224,187  
**P.I.** C.K. Larive      **Co-P.I.** A. Mulchandani

**Cancer Research Coordinating Committee** *“Microcoil NMR Experiments for the Identification of Oligosaccharide Binding Motifs”*  
**Period:** 07/06 – 06/07      **Amount:** \$45,000  
**P.I.** C.K. Larive

**NSF CHE-0535435** *“Development and Application of Improved Methods for Coupling NMR and Capillary Isotachopheresis”*  
**Period:** 09/01/02 – 8/31/05      **Amount:** \$300,000,      **Supplement:** \$22,482  
**P.I.** C.K. Larive

**NSF CHE-0133237** *“Fundamental Studies of In Situ Biosurfactant Production and the Attendant Impact on Metal Interactions with Soil Surfaces”*  
**Period:** 04/01/02 – 03/31/05      **Amount:** \$18,211 (subcontract to U. of Kansas)  
**P.I.** R. Maier (U. of Arizona)      **Co-P.I.** J. Pemberton (U. of Arizona), C.K. Larive

**NSF CHE-0320648** *“Acquisition of Cryoprobe/Cryoplatfrom for 500 MHz NMR”*  
**Period:** 08/01/03 - 07/31/06      **Amount:** \$186,432  
**P.I.** D. VanderVelde      **Co-P.I.** C.K. Larive

**NSF CHE-0244041** *“Summer Research Experience for Undergraduates at the University of Kansas”*  
**Period:** 03/01/03 - 02/28/06      **Amount:** \$188,710  
**P.I.** C. K. Larive

**NSF NSDL** *“Analytical Sciences Digital Library”*



**Period:** 9/01-8/03                      **Amount:** \$485,066  
**P.I.** T. Kuwana                              **Co-P.I.** S. Chalk, R.C. Dorey, C.K. Larive

**EPA "The Fate and Effects of Fluoroquinolone Antibacterial Agents in Aquatic Systems"**  
**Period:** 10/01 - 09/04                      **Amount:** \$567,259  
**P.I.** D. Graham                              **Co-P.I.** C.K. Larive, M. Lydy (Iowa State)

**NRC "COBASE Project Development and Initiation Fellowship"**  
**Period:** 6/01 – 12/03                      **Amount:** \$8200  
**P.I.** C.K. Larive                              **Co-P.I.** B. Noszal (Semmelweis University, Budapest)

**KU RDF "The Fate and Effects of Fluoroquinolone Antibacterial Agents in Aquatic Systems"**  
**Period:** 1/01 - 1/02                      **Amount:** \$77,160  
**P.I.** C.K. Larive                              **Co-P.I.** D. Graham, F. deNoyelles

**NSF "A 600 MHz NMR Spectrometer for the University of Kansas"**  
**Period:** 03/01/00 - 02/28/01              **Amount:** \$313,990  
**P.I.** J. Urbauer                              **Co-P.I.** C. Larive, M. Richter, T. Siahaan, T. Squire

**K\*STAR/NSF "Instrumentation at the Chemical-Biology Interface: Acquisition of a 600 MHz Spectrometer"**  
**Period:** 02/01/00 – 1/31/01              **Amount:** \$250,000  
**P.I.** R. Weaver                              **Co-P.I.** C. Larive, K. Bowman-James, P. Kelly

**NSF MRI "Upgrade of a 500 MHz Nuclear Magnetic Resonance Spectrometer"**  
**Period:** 09/01/99 - 08/31/02              **Amount:** \$197,176  
**P.I.** C. K. Larive                              **Co-P.I.** D. Benson, A. Borovik, P. Hanson, M. Doughty, T. Siahaan, D. VanderVelde

**NSF "Research Experiences for Undergraduates in Chemistry at the University of Kansas"**  
**Period:** 3/00-2/02                      **Amount:** \$58,990  
**P.I.:** K. B. Schowen                      **Co-P.I.** C.K. Larive

**EPA-EPSCoR "The Role of Natural Organic Matter in the Transport, Disposition and Binding of Atrazine"**  
**Period:** 7/99-6//01                      **Amount:** \$169,613  
**P.I.** C. K. Larive                              **Co-P.I.** A. Bhandari, K. Xia, W. R. Carper

**NSF CCLI "Clarifying Concepts of Concentration, Equilibrium and Reaction Rate in Introductory Chemistry Using Visible Spectroscopy"**  
**Period:** 5/99-5/01                      **Amount:** \$62,581  
**P.I.** J. Heppert                              **Co-P.I.** C.K. Larive, K. Ratzlaff, J. Robinson

**Dupont Aid to Education Grant "Mixture Analysis with PFG NMR"**  
**Period:** 1/99 -7/00                      **Amount:** \$25,800  
**P.I.** C.K. Larive

**NSF DUE "Problem-Oriented Surface Analysis in the Junior-Senior Laboratory"**  
**Period:** 4/98 - 5/00                      **Amount:** \$35,150  
**P. I.** R. Dunn                              **Co-P.I.** G. Wilson, C. Lunte, C. Larive

**William and Flora Hewlett Foundation "A Paradigm Shift in the Laboratory Experience"**  
**Period:** 5/98 - 4/00                      **Amount:** \$150,000  
**P. I.** J. Heppert                              **Co-P.I.** C. Larive, B. Laird, R. Carlson

**NSF Career** *"NMR Spectroscopic Investigation of Peptide Aggregation"*

**Period:** 4/95-3/98                      **Amount:** \$195,000

**P.I.** C.K. Larive

**NSF** *"Characterization of Metal Ion Complexation and Aggregation of Humic Substances"*

**Period:** 9/95-8/98                      **Amount:** \$192,001, Supplement \$29,477

**P.I.** C.K. Larive                      **Co-P.I.** W. Robert Carper, Wichita State University

**NSF** *"Summer Research for College Teachers with Emphasis in Bioanalytical and Environmental Analytical Chemistry"*

**Period:** 5/94-4/99                      **Amount:** \$171,000, Supplement \$11,072, Creativity Extension \$130,120

**P.I.** T. Kuwana                      **Co-P.I.** C.K. Larive

**NSF-ARI** *"Acquisition of 400 MHz Nuclear Magnetic Resonance Spectrometer"*

**Period:** 10-1-95 to 9-30-98              **Amount:** \$221,905

**P.I.** D. Vander Velde                      **Co-P.I.** C.K. Larive

**Eli Lilly** *"New Faculty Grant in Analytical Chemistry"*

**Period:** 10/96-10/97                      **Amount:** \$10,000

**P.I.** C.K. Larive

**Monsanto Foundation** *"Minority Fellowship for the Support of Sheila Rogers"*

**Period:** 9/96-9/99                      **Amount:** \$100,000

**P.I.** C.K. Larive

**Dow Corning** *"Preliminary Diffusion Experiments on Silica Compounds"*

**Period:** 11/96-6/97                      **Amount:** \$1,000

**P.I.** C.K. Larive

**University of Kansas New Faculty Research Award** *"Measurement of Protein Aggregation Equilibria using Nuclear Magnetic Resonance Spectroscopy"*

**Period:** 7/92-7/93                      **Amount:** \$5,000

**P.I.** C.K. Larive

**University of Kansas Center for Bioanalytical Research** *"Metabolic Profiling using NMR Spectroscopy Coupled with Microdialysis"*

**Period:** 8/93-8/94                      **Amount:** \$18,000

**P.I.** C.K. Larive

**Petroleum Research Fund** *"Probing the Relationship Between Structure, Aggregation and Conformation in Model Peptides"*

**Period:** 9/94-8/96                      **Amount:** \$20,000

**P.I.** C.K. Larive

**Sigma Kappa Foundation** *"Characterization of the Metal Ion Binding Chemistry of  $\beta$ -Amyloid Peptides"*

**Period:** 11/94-10/95                      **Amount:** \$7,500

**P.I.** C.K. Larive

**UNDERGRADUATE RESEARCH STUDENTS MENTORED:** I have mentored 47 undergraduate researchers of whom 25 were female, and 12 were members of ethnic groups traditionally underrepresented in science. The names of my undergraduate coauthors are underlined in the list of publications.

## **GRADUATE STUDENTS MENTORED:**

**University of California – Riverside:** Current graduate students: Meredith Dinges, Andrew Green, Corey Griffith, Melissa Morgan

### **Graduates – University of California – Riverside**

- Ph.D. 2015 Consuelo Beecher "Molecular Level Characterization of Heparin Structure"  
Ph.D. 2013 Daryl Bulloch "Analysis and Characterization of Halogenated Transformation Products of Pharmaceuticals and Personal Care Products in Wastewater Effluent"  
Ph.D. 2013 Gregory Barding "Metabolomics of Complex Biological Systems to Uncover Molecular Mechanisms in Rice and Other Organisms"  
Ph.D. 2013 Derek Langeslay "Advancing Analytical Methods for Characterization of Anionic Carbohydrate Biopolymers"  
Ph.D. 2012 Christopher Jones "Advancement of Separation and Characterization Techniques for Ionic Analytes"  
Ph.D. 2012 Kayla Kaiser "Metabolic Profiling of Primary and Secondary Biosynthetic Pathways in Angiosperms: Comparative Metabonomics and Applications of Hyphenated LC-NMR and LC-MS"  
Ph.D. 2011 John Limtiaco "Development of NMR Methods for the Characterization of Heparin and its Impurities"  
Ph.D. 2010 Jennifer Cruz "Characterizing Ligand-Protein Interactions by Ligand-Detected Nuclear Magnetic Resonance (NMR) Methods"  
Ph.D. 2009 Stacie Eldridge "Development of Analytical Methods for Trace Impurity Analysis and Structure Determination of Heparin/Heparan Sulfate-Derived Oligosaccharides"  
M.S. 2007, Fang (Kasie) Fang "Application of <sup>1</sup>H NMR and LC-TOF/MS for Metabonomic Studies of Plasma and Tissue"

### **Graduates - University of Kansas**

- Ph.D. 2008 (honors) Kristin Price (joint with Craig Lunte) "Tissue-Targeted Metabonomics: Metabolic Profiling by Microdialysis and NMR Spectroscopy"  
Ph.D. 2007 (honors), Albert Korir "Development and Application of Microanalysis NMR Methods"  
Ph.D. 2006 (honors), Bridget Becker "Development and Application of NMR Methods for Drug Discovery and Development"  
Ph.D. 2006, Valentino Almeida "Implementation and Development of Microcoil NMR Coupled With Microscale Separation Techniques for Trace Impurity Analysis"  
Ph.D. 2004, Laurie Cardoza Harned, "Application of HPLC-NMR, HPLC-MS and MS/MS for the Investigation of the Environmental Fate of the Fluoroquinolone Antibiotics"  
Ph.D. 2004 (honors), Laura Lucas, "Development and Application of State-of-the-art Nuclear Magnetic Resonance (NMR) Spectroscopic Methodologies to Analytical Challenges Relevant to the Drug Development Process"  
Ph.D. 2001, William Otto, "Investigation of the Metal Complexation and Intermolecular Interactions of Humic Substances by NMR Spectroscopy"  
Ph.D. 2001, Ben Cutak, "Application and Improvement of Environmental Methods of Analysis"  
Ph.D. 2000, Tiffany Derrick, "Critical Analysis of Affinity NMR for the Measurement of Protein/Ligand Binding"  
M.S. 2000, Farhana Afroz, "A Study of the Aggregation Behavior of the  $\beta$ (12-28) Peptide with Pulsed-field Gradient (PFG)-NMR and Other Analytical Methods"  
Ph.D. 1999, Ann Dixon, "The Investigation of Structure and Binding of Aquatic Humic Substances"  
Ph.D. 1999, Sheila Rogers, "Development of NMR Methods for Peptide Analysis"  
Ph.D. 1998, Dimuthu Jayawickrama, "Examination of Molecular Association using NMR Spectroscopy"  
Ph.D. 1998, Shawn Mansfield, "Investigation of Peptide Aggregation using Several Analytical Methodologies"  
M.S. 1998 Nalin Hathurusinghe "Analytical Methodologies for the Study of Peptide Aggregation"  
M.S. 1994, Shauna Zink, "Spectroscopic Conformational Analysis of  $\beta$ (1-28) and  $\beta$ (12-28) Peptides"

## **PROFESSIONAL ORGANIZATIONS AND ACTIVITIES**

American Chemical Society

AAAS  
SACNAS (lifetime member)

## **SERVICE**

### **Departmental (UC-Riverside)**

Member, Search Committee for endowed professors, 2017  
Member, Search Committee for Undergraduate Student Affairs Officer, 2012  
Member, Search Committee for Chemistry Department MSO, 2011  
Chair, Search Committee for an Assistant Professor in Bioanalytical Chemistry, 2010 - 2011  
Chair, Search Committee for a Lecturer with Potential Security of Employment, 2010  
Organizing Committee for the Chemistry Graduate Program 50<sup>th</sup> Anniversary, 2010  
Undergraduate Adviser, 2009 - 2011  
Chemistry Club Adviser, 2009 - 2011  
Director, Analytical Chemistry Instrumentation Facility, 2006 - 2010  
Chair, Graduate Recruiting Committee, 2005 - 2009  
Chemistry Graduate Student Advisor, 2008 - 2009  
Department of Chemistry Executive Committee, 2006 - 2011  
Bioanalytical Science REU Program Director, 2006 - 2008  
Search Committee for an Assistant Professor in Analytical Chemistry, 2005 - 2006  
Graduate recruiting committee member, 2005  
Search Committee for an Assistant Professor in Analytical Chemistry, 2004 - 2005.

### **University (UC-Riverside)**

Member, Search Committee for a Professor (open rank) in Astrobiology  
Chair, Search Committee for the Associate Vice-Chancellor for Diversity, Inclusion, and Equity, 2015 – 2016  
Member, STEM Center Design Committee, 2016  
UC - Riverside Representative to the UC System-wide Advisory Committee on the Status of Women, 2010 -2015  
Chair Hellman Fellows Selection Committee, 2011, 2013, 2014  
Search Committee for Vice-Chancellor for Business Administration, 2013 - 2014  
Chair, Search Committee for the Associate Vice-Provost for Faculty Success, 2012 - 2013  
CNAS Science Lecture Series Advisory Committee, 2011  
Search Committee for Athletic Director, 2011  
Strategic Plan Implementation Advisory Committee, 2011  
Campus Strategic Planning, Academic Excellence Committee, 2009 - 2010  
Genomics Building Policy Committee, 2009 - 2011  
Graduate Council, 2009 - 2010  
CNAS Research Infrastructure Strategic Planning Committee, 2009  
Steering Committee for a Leadership Institute for Undergraduate Women in STEM, 2008 - 2010  
AGEP Advisory Committee, 2008 - 2010  
UC - Riverside Diversity Advisory Council, 2008 - 2010  
Search Committee for the Dean of the Graduate Division, 2008  
Campus Research Facilities and Instrumentation Advisory Board, 2007 - 2010  
GradSIS Steering Committee, 2007 - 2010  
Search Committee Biochemistry Structural Biology, 2007 - 2008

### **Professional**

ACS Division of Analytical Chemistry, Past Chair (2014), Chair (2013), Program Chair (2012), Chair-elect (2011)  
ACS Committee on Professional Training, 2005 – 2006, 2012 – 2015, vice-chair: 2007-2008, chair: 2009-2012  
Chair, ACS Task Force on International Chemistry Education, 2014  
Cal State LA MORE Board of External Advisors, 2011 - present  
ACS Graduate Education Advisory Board, 2004 - 2011

Chemistry REU Leadership Group, 2006 - 2010  
ACS Division of Analytical Chemistry Web Committee, 2007 - 2010  
Chair, ACS Division of Analytical Chemistry Education Committee, 2003 - 2007  
Contributing Editor, McGraw-Hill Yearbook of Science and Technology, 2002 - 2006  
Local Section ACS President, 2003  
ACS Division of Analytical Chemistry Education Committee, 1997 - 2002  
Co-Program Chair, Midwest Regional ACS meeting, Lawrence, KS Oct 23-25, 2002  
IUPAC Young Observer, 2001  
Society for Applied Spectroscopy Nominating Committee, 2000  
ACS Local Section Carnival of Chemistry Volunteer, 1997-2000  
President, Kansas City Section of the Society for Applied Spectroscopy, 1995 - 96, 1998 - 99  
Secretary Lawrence Section of the American Chemical Society, 1998 - 99  
FMC Lawrence Plant, Community Advisory Panel, 1996 - 98  
Registration Chair, 1996 FACSS Meeting, Kansas City, MO  
Secretary, Kansas City Section of the Society for Applied Spectroscopy, 1994 - 95

### **External Reviews, Study Panels and Workshops**

External Review of the Department of Biochemistry, University of Miami, 2016  
European Research Council Starter Grant Panel, Brussels, Belgium 2015  
NIH P01 Panel, 2014  
External Review of the Department of Chemistry and Biochemistry, CSU - Los Angeles, 2014  
External Review of the Department of Chemistry, Oklahoma State University, 2011  
Committee of Visitor Review NSF Chemistry, 2010  
External Review of the Department of Chemistry and Biochemistry, CSU – Fullerton, 2009  
NIH Natural Products Special Study Section, 2008  
NSF Engineering Separations Panel, 2007  
External Review of the SUNY Binghamton Chemistry Department, 2006  
NSF MRI panel, 2006  
NSF Workshop on Biomeasurements, April 21, 2006, Tucson, AZ  
NIH EBT study section, Ad hoc reviewer, 2006  
NIH Natural Products Special Study Section, 2005  
Undergraduate Chemistry Curriculum Review Committee, University of California – Merced, 2005  
Reviewer for Louisiana State Board of Reagents Research and Development Program, 2004  
NSF EMSI site review, Ohio State, 2003  
NIH Biochemistry study section, Ad hoc reviewer, 2002  
EPSRC review panel: Chairs of Analytical Chemistry in Great Britain, 2001  
NSF International Postdoctoral Research Fellowship program review panel, 2001  
NSF POWRE panel, Washington, DC, 2000  
NSF Workshop: Instrumentation for Environmental Science, 2000  
NSF Analytical Chemistry CAREER Program Panel, 1995, 1999  
NSF RSEC program review panel, Anaheim, CA, 1999  
NSF Workshop: Analytical Instrumentation for the Next Millennium, Orlando, FL, 1999  
NSF Environmental Geochemistry Biogeochemistry program review panel, 1998  
NSF sponsored Curricular Development Workshops in Analytical Sciences, October 28-30, 1996, Leesburg, VA and March 13-15 1997, Atlanta, GA

### **Symposia and Meetings Organized**

"Promoting Engaged Student Learning through the ACS Guidelines", 250<sup>th</sup> ACS National Meeting, Boston, August 2015, Organized jointly with Thomas Wenzel, Bates College  
"Tips and Tools for Incorporating Active Learning into Analytical Chemistry Courses" Pittcon Networking Session, March 2015, New Orleans, Organized jointly with Anna Cavinato, Eastern Oregon University  
"An International View on Chemistry Education" 248<sup>th</sup> ACS National Meeting in San Francisco, 9/10-14/2014. Organized jointly with Edgar Arriaga, University of Minnesota.  
"Active-learning in Analytical Chemistry for Faculty at HBCU and Hispanic-serving Institutions", Organized jointly with Tom Wenzel and other ASDL principals, June 2014, Spelman College, Atlanta, GA

"Heparin Synthesis, Analysis and Biological Functions" 245<sup>th</sup> ACS National Meeting in New Orleans, LA 4/8-9/2013. Organized jointly with Jian Liu, UNC – Chapel Hill and Robert Linhardt, RPI  
 ACS Division of Analytical Chemistry program chair for 2012. Responsible for programming at the Spring (San Diego) and Fall (Philadelphia) National ACS meetings and for the Division's programming at the Pittsburgh Conference on Analytical Chemistry (Orlando).  
 "Excellence in Undergraduate Chemistry Education: A Global Perspective" Presidential Event, 240<sup>th</sup> ACS meeting, Boston, MA 8/23/2010  
 "Celebration of the 50<sup>th</sup> anniversary of the UCR Chemistry Graduate Program" UC-Riverside, 6/18/2010  
 "Innovative Approaches to Analytical Science Education" co-organized with Carol Korzeniewski, Pittsburgh Conference on Analytical Chemistry, Feb 28 – Mar 5, 2010, Orlando, FL  
 "NSF Chemistry REU Pls' Meeting" co-organized with Prof. Tim Hanks, San Antonio, TX July 8-10, 2009  
 "Increasing Participation of Hispanic Undergraduates in Chemistry" co-organized with Prof. Carlos Gutierrez, Washington, DC November 14-16, 2008  
 "Increasing Participation of Native American Undergraduates in Chemistry" co-organized with Prof. Ron Estler, Fort Lewis College, Omaha, NE, Sept. 12-14, 2008  
 "Southern California Undergraduate Research Conference in Chemistry and Biochemistry" UCR. Apr. 19, 2008.  
 "Reimagining Quant" Co-organized with Peter Griffiths, University of Idaho, The Pittsburgh Conference on Analytical Chemistry, New Orleans, LA 3/6/2008.  
 Southern California Users of Magnets (SCUM) meeting Co-organized with Len Mueller and Dan Borchardt, UC-Riverside, Dec. 9, 2006.  
 Southwest Analytical Professors (SWAP) meeting, UC-Riverside, Feb. 10-11, 2006  
 "Applications of Bioanalytical NMR" Western Regional ACS Meeting, Anaheim, CA, Jan 23, 2006  
 "Next Generation of Analytical Chemical Professionals" 229<sup>th</sup> ACS National Meeting, San Diego, CA March 14, 2005.  
 "Opportunities for Analytical Chemists in the Pharmaceutical Industry" 228<sup>th</sup> ACS National Meeting, Philadelphia, PA, August 22-26, 2004  
 "Graduate Student Session" SMASH NMR Conference, Verona, Italy, Sept. 17, 2003  
 "Midwest Magnetic Resonance Symposium" Midwest Regional ACS Meeting, Lawrence, KS Oct. 25, 2002  
 "Career Opportunities in Environmental Analytical Chemistry" ACS National Meeting, Orlando, FL, April 9, 2002  
 "Environmental Contaminants and Their Degradation Products" Pittsburgh Conference on Analytical Chemistry, New Orleans, LA, March 21, 2002  
 "Advances in NMR Spectroscopy for Characterizing Pharmaceuticals" Pittsburgh Conference on Analytical Chemistry, New Orleans, LA, March 18, 2002  
 "Analytical Chemistry: A Broad Spectrum of Career Opportunities", ACS National Meeting in Washington D.C., August 20-24, 2000.  
 "Rediscovering Research - The Impact of Research on Undergraduate Education" with Kelsey Cook, University of Tennessee at the National ACS meeting in Boston, MA, Aug. 23-28, 1998.  
 Analytical Chemistry Sessions, 1997 Midwest Regional ACS meeting, Tan-Tar-A Resort, Osage Beach, MO, Oct. 29-Nov.1, 1997.  
 "Nuclear Magnetic Resonance Diffusion Measurements" 1996 FACSS, Kansas City, MO.  
 "Peptides/Proteins Characterization with NMR Spectroscopy", 1996 FACSS, Kansas City, MO.  
 "Non-invasive Bioanalysis with NMR Spectroscopy", 1994 FACSS Meeting, St. Louis, MO.