

Robert L. McFeeters

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Current Position:

2008-present Assistant Professor of Chemistry, University of Alabama, Huntsville AL

Education and Research Experience:

- 2002-2008 Post-doctoral Fellow, National Cancer Institute, Frederick, MD
Projects included functional characterization and structure determination of the antiviral protein Scytovirin and *Yersinia* modulating protein YmoA. Structural studies of Interleukin-13 and its interaction with receptors were also conducted. Nuclear magnetic resonance spectroscopy was the primary technique utilized. Other biophysical techniques implemented include mass spectrometry, isothermal titration calorimetry, circular dichroism, fluorescence spectroscopy, and dynamic light scattering.
- 1995-2002 Ph.D. in Molecular Medicine, Cornell University, Ithaca, NY
Thesis Title: Characterizing Iontropic Glutamate Receptor Structure/Function by Nuclear Magnetic Resonance. Minored in Neurobiology. Learned a variety of techniques including cloning, PCR, protein expression involving *Pichia pastoris* and *E. coli*, protein purification from soluble and insoluble fractions, uniform and site-specific isotopic labeling, and nuclear magnetic resonance.
- 1991-1995 B.S. Engineering Physics, University of Colorado, Boulder, CO
Graduated *magna cum laude* with distinction and a minor in Applied Math. Honor's Thesis Title: Two Dimensional Density Mapping of Photosystem II Using Transmission Electron Microscopy. Learned the basics of transmission electron microscopy and utilized density separation for crude purification of photosystem II protein crystals from barley *Hordeum vulgare viridis* z^b⁶³.
- 1993-1995 Undergraduate Research Associate, Laboratory of Atmospheric and Space Physics, University of Colorado, Boulder, CO. Gained experience in electronics design and fabrication, computer aided drafting, and assembly of spectrophotometric instrumentation. Familiarity with high vacuum systems and multiple wavelength photon counting acquired.
- 2013-present Editor for JSM Biotechnology & Biomedical

Honors and Fellowships:

Featured in April 2013 International Innovations
NIH Post-doctoral Fellowship, 2002-2008
USAMRMC Breast Cancer Research Predoctoral Fellowship
PhRMA Advanced Predoctoral Fellowship
ΣΠΣ (Physics), τβπ (Engineering), Gold Key (Academic) Honor Societies

Publications:

H. McFeeters, M. J. Gilbert, A. M. Wood, C. B. Haggemaker, J. Jones, O. Kutsch, R. L. McFeeters, Scytovirin Engineering Improves Carbohydrate Affinity and HIV-1 Entry Inhibition, *Biochemistry and Physiology*, S2-003, 2013.

J. K. Baird, R. L. McFeeters, Effects of Hydrodynamic Convection and Interionic Electrostatic Forces on Protein Crystallization, *Crystal Growth and Design*, 13:1889-1898, 2013.

J. K. Baird, R. L. McFeeters, K. G. Caraballo, Specific Rate of Protein Crystallization Determined by the Guggenheim Method, *International Journal of Thermophysics*, 2013.

R. C. Hughes, H. McFeeters, L. Coates, R. L. McFeeters, Recombinant Production, Crystallization and X-ray Crystallographic Structure Determination of the Peptidyl-tRNA Hydrolase of *P. aeruginosa*, *Acta Crystallographica Section F*, 68(12):1472-1476, 2012.

H. McFeeters, R. L. McFeeters, Antifungal Approaches to the Recurring Threat of *Botrytis cinerea*, *International Journal of Modern Botany*, 2(5):127-144, 2012.

S. Rathi, H. McFeeters, R. L. McFeeters*, M. R. Davis, Purification and Phytotoxic Analysis of *Botrytis cinerea* Virulence Factors: New Avenues for Crop Protection, *Agriculture*, 2(3):154-164, 2012. *corresponding author

H. McFeeters, M. J. Gilbert, R. M. Thompson, W. N. Setzer, L. R. Cruz-Vera, and R. L. McFeeters, Inhibition of Essential Bacterial Peptidyl-tRNA Hydrolase Activity by Tropical Plant Extracts, *Natural Products Communications*, 7(8):1107-1110, 2012.

T. M. Sabo, D. Bakhtiari, K. F. A. Walter, R. L. McFeeters, K. Giller, S. Becker, C. Griesinger, D. Lee, Thermal Coefficients of the Methyl Groups within Ubiquitin, *Protein Science*, 21(4):562-570, 2012.

S. M. Harris, H. McFeeters, I. V. Ogungbe, L. R. Cruz-Vera, W. N. Setzer, B. R. Jackes, R. L. McFeeters, Peptidyl-tRNA Hydrolase Screening Combined with Molecular Docking Reveals the Antibiotic Potential of *Syzygium johnsonii* Bark Extract, *Natural Products Communication*, 6(10):1421-1424, 2011.

R. Chandrashekar, O. Salem, H. Křížová, R. L. McFeeters, P. Adams, A Switch I Mutant of Cdc42 Exhibits Decreased Conformational Freedom, *Biochemistry*, 50(28):6196-6207, 2011.

T. J. Giesy, A. S. Chou, R. L. McFeeters, J. Baird, Critical-point Universality in Adsorption: The Effect of Charcoal on a Mixture of Isobutyric Acid and Water Near the Consolute Point, *Physical Review E*, 83(6-1):0612011-0612018, 2011.

Post-Doctoral

R. Das, J. Mariano, Y. C. Tsai, R. C. Kalathur, Z. Kostova, J. Li, S. G. Tarasov, R. L. McFeeters, A. S. Altieri, X. Ji, R. A. Byrd, A. M. Weissman, Allosteric Activation of E2-RING Finger-Mediated Ubiquitylation by a Structurally Defined Specific E2-Binding Region of gp78, *Molecular Cell*, 34, 674-685, 2009.

R. L. McFeeters, C. Xiong, B. R. O'Keefe, H. Bokesch, J. B. McMahon, D. M. Ratner, R. Castelli, P. H. Seeberger, R. A. Byrd, The Novel Fold of Scytovirin Shows a New Twist for Antiviral Inhibitors, *Journal of Molecular Biology*, 369:451-461, 2007.

R. L. McFeeters, A. S. Altieri, S. Cherry, J. E. Tropea, D. S. Waugh, R. A. Byrd, High Resolution Solution Structure of *Yersinia* Modulating Protein YmoA Provides Insight into its Interaction with H-NS, *Biochemistry*, 46:13975-13982, 2007.

R. A. Byrd, C. A. Fowler, R. L. McFeeters, V. Gaponenko, Novel Uses of Paramagnets to Solve Complex Protein Structures, *Handbook of Modern Magnetic Resonance, Pharmaceutical Sciences*, D. Craik, Section Editor, Springer 2006.

R. L. McFeeters, C. A. Fowler, V. V. Gaponenko, R. A. Byrd, Efficient and Precise Measurement of H^{α} - C^{α} , C^{α} - C^{γ} , C^{α} - C^{β} and H^N -N Residual Dipolar Couplings from 2D H^N -N Correlation Spectra, *Journal of Biomolecular NMR*, 31:35-47, 2005.

Graduate

R. L. McFeeters, R. E. Oswald, Emerging Structural Explanations of Ionotropic Glutamate Receptor Function, *FASEB Journal*, 18(3):428-438, 2004.

R. L. McFeeters, R. E. Oswald, Structural Mobility of the Extracellular Ligand-Binding Domain of an Ionotropic Glutamate Receptor: Analysis of NMR Relaxation Dynamics, *Biochemistry*, 41(33):10472-10481, 2002.

R. L. McFeeters, G. V. T. Swapna, G. T. Montelione, R. E. Oswald, Semi-Automated Backbone Resonance Assignments of the Extracellular Ligand-Binding Domain of an Ionotropic Glutamate Receptor, *Journal of Biomolecular NMR*, 22(3):297-298, 2002.

R. E. Oswald, T. M. Suchyna, R. L. McFeeters, P. Gottlieb, F. Sachs, Solution Structure of Peptide Toxins that Block Mechanosensitive Ion Channels, *Journal of Biological Chemistry*, 277(37):3443-3450, 2002.

Undergraduate

K. Marr, R. L. McFeeters, M. K. Lyons, Isolation and Structural Analysis of Two-dimensional Crystals of Photosystem II from *Hordeum vulgare viridis* zb^{63} , *Journal of Structural Biology*, 117:86-98, 1996.

Invited Talks and Presentations:

Mississippi Regional Biophysics Consortium, Invited Talk, 2013

University of Colorado Denver, Department of Chemistry, Invited Lecture, 2012

American Chemical Society Madison Marshall Symposium, Invited Talk, 2011

American Council for Medicinally Active Plants Conference, Invited Short Talk, 2011

Masaryk University, CEITEC Structural Biology and Biochemistry, Invited Lecture, 2011

Auburn University, Department of Chemistry, Invited Lecture, March 2011

University of Arkansas, Invited Lecture, November, 2010

Vanderbilt University, Department of Chemistry and Biology, Invited Lecture, 2010

University of Illinois Chicago, Dept. of Biochem. & Molecular Genetics, Invited Lecture, 2009

South Eastern Magnetic Resonance Conference, Short Talk 2009

Teaching Experience:

Instructor for General Chemistry I & II, Elementary Biochemistry, General Biochemistry I & II, Graduate Biochemistry I & II, Chemistry and Biotechnology Seminar Series
2010 & 2012 University of Alabama System Effective Teaching Workshop
2005 & 2007 NIH Active Learning and Effective Teaching Techniques Workshop

Memberships:

American Chemical Society
Sigma Xi Scientific Research Society
American Council for Medicinally Active Plants