JAMES RICKY COX, PH.D. Curriculum Vitae

Professor of Chemistry
Anna S. Brown and Ruth B. Logan Endowed Chair in Pre-Medicine
Murray State University
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Department of Chemistry
1240 Jones Hall
Murray State University
Murray, KY 42071-3346
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EDUCATION

Doctor of Philosophy in Biochemistry (1993-1997)
The University of Tennessee at Knoxville, Knoxville, TN. (GPA: 4.00/4.00)
Research advisor: Professor Engin Serpersu
Dissertation: *NMR Studies of Aminoglycoside Antibiotics Bound to an Aminoglycoside Antibiotic 3'-Phosphotransferase*

Master of Science in Chemistry (1990-1993)
Murray State University, Murray, KY. (GPA: 3.91/4.00)
Research advisor: Professor Robert Volp
Thesis: *Liver Microsomal Lipid Peroxidation Induced by Chloropropanes*

Bachelor of Science in Chemistry (ACS certified, 1986-1990)
The University of Tennessee at Martin, Martin, TN. (GPA: 3.82/4.00, *summa cum laude*).

PROFESSIONAL SOCIETIES

American Chemical Society
- Division of Biological Chemistry
- Division of Chemical Education

Kentucky Academy of Science
Council on Undergraduate Research

MAJOR SKILLS AND TRAINING

Multidimensional and multinuclear NMR techniques, protein purification and enzyme kinetics, fluorescence spectroscopy and covalent modification of proteins, molecular modeling and methods in computational biochemistry, chromatographic techniques such as ion-exchange, size-exclusion, and HPLC, preparation and experimental use of metal analogs of adenosine triphosphate, and technology-based tools for teaching and learning.

HONORS AND AWARDS @ MURRAY STATE UNIVERSITY

Murray State University Distinguished Professor (2011). *This award, established in 1964 by the Alumni Association, acknowledges an outstanding faculty member who has had a profound and positive impact on students.*

Max Carman Outstanding Teacher Award (2011). *Presented by the Student Government Association at Murray State University to faculty members who excel in the classroom and promote teaching excellence.*

Who's Who in America (2010)

Kentucky Professor of the Year (2008). Presented by the Carnegie Foundation for the Advancement of Teaching and the Council for Advancement and Support of Education (2008). *This award is presented for extraordinary dedication to undergraduate teaching.*
(*http://www.usprofessorsoftheyear.org/*)

Dr. Karl F. Hussung Professorship in Chemistry Award (2008-2009). *This award presented annually by the Department of Chemistry based on superlative efforts in teaching, research or service.*

Kentucky Academy of Science Superlative Award: Outstanding College or University Teacher (2007). *This award is presented annually to a faculty member who has made some significant contributions primarily to science teaching but also to research at the college/university level in Kentucky*.

MSU Board of Regents Award for Teaching Excellence (College of Science, Engineering and Technology, 2005)

Teaching Scholar-in-Residence at the Center for Teaching, Learning and Technology (2005-2006)

MSU Student Support Services Fabulous Faculty Teaching Award (2005)

Blackboard Fellow, Center for Teaching, Learning and Technology (2002)

Who's Who Among America's Teachers (2002)

PREVIOUS HONORS AND AWARDS

Graduate Student Award for Excellence in Research, Department of Biochemistry (UTK, 1997)

University of Tennessee Science Alliance Graduate Student Award of Excellence for Teaching and Research (UTK, 1996)

Graduate Student Award for Excellence in Teaching, Department of Biochemistry (UTK, 1996)

Outstanding Graduate Student in Biochemistry Award presented by The American Institute of Chemists Foundation (UTK, 1995)

PROFESSIONAL EXPERIENCE

Anna S. Brown and Ruth B. Logan Endowed Chair in Pre-Medicine (09/2009-present)
Department of Chemistry
Murray State University, Murray, KY

Interim Department Chair (07/2011-06/2012)
Department of Chemistry
Murray State University, Murray, KY

Professor of Chemistry (08/2008-present)
Department of Chemistry
Murray State University, Murray, KY

Interim Director (08/2008-07/2009)
Center for Teaching, Learning and Technology
Murray State University, Murray, KY

Teaching Scholar-in-Residence (08/2005-07/2006) and Consultant (08/2006-07/2008)
Center for Teaching, Learning and Technology
Murray State University, Murray, KY

Associate Professor of Chemistry (08/2003-07/2008)
Director of the Molecular Modeling and Bioinformatics Lab
Department of Chemistry
Murray State University, Murray, KY

Assistant Professor of Chemistry (08/1999-07/2003)
Department of Chemistry
Murray State University, Murray, KY

Assistant Professor of Chemistry (August 1998-July 1999)
Department of Chemistry
Georgia Southern University, Statesboro, GA

Postdoctoral Research Associate (08/1997-07/1998)
Department of Chemistry
The University of Tennessee at Knoxville, Knoxville, TN
Advisor: Prof. David Baker

Graduate Teaching Assistant (08/1993-07/1997)
Department of Biochemistry, Molecular and Cellular Biology
The University of Tennessee at Knoxville, Knoxville, TN

Chemistry Instructor (08/1992-05/1993)
Department of Chemistry
Murray State University, Murray, KY

Chemistry Instructor (08/1992-12/1992)
Department of Chemistry
The University of Tennessee at Martin, Martin, TN

Graduate Research Assistant (08/1991-07/1992)
Department of Chemistry
Murray State University, Murray, KY
Advisor: Prof. Robert Volp

Graduate Teaching Assistant (08/1990-07/1991)
Department of Chemistry
Murray State University, Murray, KY

ADMINISTRATIVE/ENDOWED POSITIONS

RUTH B. LOGAN AND ANNA S. BROWN ENDOWED CHAIR IN PRE-MEDICINE (09/2009-PRESENT)

-advisor to the Pre-Health Professionals (PHP) student organization
-planning and implementing Pre-Health curricula
-involvement in University of Kentucky Rural Physician Leadership Program

INTERIM CHAIR OF THE DEPARTMENT OF CHEMISTRY (07/2011-06/2012)

-managed chemistry faculty and staff
-budget manager
-strategic planning and assessment activities
-departmental data collection (ACS scores, etc)
-webpage reconstruction and content development
-outreach and recruitment (field day, scholarship tournament, etc)
-establish culture that better embraces assessment and data collection/evaluation (informed decisions)
-peer teaching
-SACS reports
-building planning (programming and design) + planning meetings

INTERIM DIRECTOR, CENTER FOR TEACHING, LEARNING AND TECHNOLOGY (08/2008-07/2009)

-strategic planning
-statewide faculty development workgroup
-faculty development grants
-budget manager
-merging of helpdesk into CTLT
-teaching and learning events/programming

CONSULTANT/ADVISORY POSITIONS

HIGHER EDUCATION TEACHING, LEARNING AND TECHNOLOGY

Member, Review Board for the Pre-Health Collection (iCollaborative) of the MedEdPORTAL, American Association of Medical Colleges (AAMC).

Chair, National Advisory Board for the Teaching Professor Technology Conference (October 2013)
http://www.facultyfocus.com/conferences/tech-conference/advisory-board/

Chair, National Advisory Board for the 2010 Teaching Professor Conference (Boston, Mass)
www.teachingprofessor.com.

Member, National Advisory Board for the 2008 and 2009 Teaching Professor Conferences
www.teachingprofessor.com.

TEACHING SCHOLAR-IN-RESIDENCE, INTERIM DIRECTOR AND CONSULTANT CENTER FOR TEACHING, LEARNING AND TECHNOLOGY (CTLT)

Teaching and Learning Initiatives:

Creator and Moderator, Hot Topics in Teaching and Learning Blog (2008-2010)
Creator and Founding Editor, Murray State Teaching Chronicles (2005-2009)
Creator and Coordinator, Murray State Teaching Postcards (2005-2009)
Designer, Teaching Innovation Faculty Fellowship (2005-2008)
Evaluator, Peer Review of Teaching Program

Events/Activities:

<u>Annual Teaching and Technology Forum</u>

Organizer, CTLT Teaching and Technology Forum (2009)
Theme: Connect, Engage, Empower

Organizer, CTLT Teaching and Technology Forum (2008)
Theme: Big Ideas on Teaching

Organizer and Participant, CTLT Teaching and Technology Forum (2007)
Theme: Learning Spaces

Organizer and Moderator, CTLT Teaching and Technology Forum (2006)
Theme: The Artisanship of Teaching: Polishing the Tools of the Trade

Organizer and Moderator, CTLT Teaching and Technology Forum (2005)
Theme: Finding Common Ground: Making Connections Across Campus

Web Conferencing

Participant, a webinar entitled "Synergistic Capabilities of Digital Pens and the Collaborative Tools in Elluminate" during the Elluminati Regional Group Conference at Tennessee Technological University (March 14, 2008). This event was sponsored by Elluminate (*www.elluminate.com*).

Participant, a webinar entitled "Pen-Based Computing + Elluminate = Powerful Way to Teach and Learn" in a special event to highlight the synergism between pen-based devices and Ellumunate (March 27, 2008). This event was sponsored by Elluminate (*www.elluminate.com*).

Participant, a webinar entitled "Pen-Based Technology and Web Communication: A Beautiful Marriage" during the Annual Technology Conference of the Delaware Department of Education (April 19, 2007). This event was sponsored by Elluminate (*www.elluminate.com*).

Other Events/Activities

Presenter and Organizer, New Faculty Orientation (2007-present)

Organizer and Presenter, CTLT Summer Blitz Sessions (Focus on Teaching and Learning) (2005-2009)

Organizer and Discussion Leader, Online Technology Professional Development for the West Kentucky Science Alliance (High and Middle School Teachers). Presented with Amy L. Cox, Paducah Tilghman High School, Paducah, KY. November 14, 2006.

Organizer, Faculty Discussion Group on Teaching and Learning (2005-2006)

Instructor, Kentucky-Wide Workshop on Teaching and Learning (July 2005)
Title: Teaching Online–The Impact of Technology on Course Design

Instructor, CTLT Faculty Development Workshops at MSU (2005-2006)
Title: Teaching with the Tablet PC (March 2006)
Title: Anatomy of Course Design (for the College of Health Sciences and Human Services, January 06)
Title: Communicating with Today's Students (Online Workshop, July 06)

Administrator, MSU Adjuncts Teaching Listserve (2005-2006)

PUBLICATIONS (PEER-REVIEWED)

-Undergraduate students are underlined and graduate students are double underlined.
-A. Farley was both an undergraduate and graduate research student

Publications while at MSU

I. Mittendorf and **Cox, J. R.** "Around the Beta-Turn: An Activity To Improve the Communication and Listening Skills of Biochemistry Students" *J. Chem. Educ.* **XXXX**, *XX*, XX-XX.

Cox, J. R. and Yearwood, D. N. "In Defense of Teaching" *The Teaching Professor* **2013**, *27(1)*, page 4.

Jones, B. W. and **Cox, J. R.** "External Representations in the Teaching and Learning of Introductory Chemistry" *Creative Education* **2011**, *2(5)*, 461-465.

Cox, J. R. "Lessons from Room 10" *The Teaching Professor* **2011**, *25(5)*, page 6.

Cox, J. R. "Enhancing Student Interactions with the Instructor and Content Using Pen-Based Technology, YouTube Videos, and Virtual Conferencing". *Biochem. Mol. Biol. Educ.* **2011**, *39*, 4-9.

Copeland, K. L., Anderson, J. A., Farley, A. R., **Cox, J. R.**, Tschumper, G. S. "Probing Phenylalanine/Adenine π-Stacking Interactions in Protein Complexes with Explicitly Correlated and CCSD(T) Computations" *J. Phys. Chem. B* **2008**, *112*, 14291-14295.

Cox, J. R. "Is it Live or is it Professor X" *The Teaching Professor*. **2008**, *22(9)*, page 2.

Derting, T. and **Cox, J. R.** "Using a Tablet PC to Enhance Student Engagement and Learning in an Introductory Organic Chemistry Course" *J. Chem. Educ.* **2008**, *85*, 1638-1643.

Rogers, J. W. and **Cox, J. R.** "Integrating a Single Tablet PC in Chemistry, Engineering and Physics Courses" *J. Coll. Sci. Teach.* **2008**, *37*, 34-39.

Lyles, H., Robertson, B., Mangino, M. and **Cox, J. R.** "Audio Podcasting in a Tablet PC-Enhanced Biochemistry Course" *Biochem. Mol. Biol. Educ.* **2007**, *35*, 456-461.

Kohorst, K. and **Cox, J. R.** "Virtual Office Hours Using a Tablet PC: E-lluminating Biochemistry in an Online Environment" *Biochem. Mol. Biol. Educ.* **2007**, *35*, 193-197.

Cox, J. R. "Developing an Alternate Assessment Exercise for an Introductory Chemistry Course" *The Teaching Professor*. **2006**, *20(9)*, 5.

Cox, J. R. "Screen Capture on the Fly: Combining Molecular Visualization and a Tablet PC in the Biochemistry Classroom" *Biochem. Mol. Biol. Educ.* **2006**, *34*, 12-16.

Cox, J. R. and Rogers, J. W. "Enter: The (Well-Designed) Lecture" *The Teaching Professor*. **2005**, *19(5)*, 1/6.

Boehr, D. D., Farley, A. R., LaRonde, F., Murdock, T. R., Wright, G. D. and **Cox, J.R.** "Establishing the Principles of Recognition in the Adenine-Binding Region of an Aminoglycoside Antibiotic Kinase (APH(3')-IIIa)". *Biochemistry* **2005**, *44*, 12445-12453.

Harper, S. A., **Cox, J. R.** and Wright, S. N. "Modeling of Benzocaine Analog Interactions with the D4S6 Segment of Nav4.1 Voltage-Gated Sodium Channels" *Biophys. Chem.* **2005**, *113*, 1-7.

Whittemore, N. A., Welch, K. T., **Cox, J. R.**, Dougall, D. K. and Baker, D. C. "A Quenched Molecular Dynamics-Rotating Frame Overhauser Spectroscopy Study of a Series of Semibiosynthetically Monoacylated Anthocyanins" *J. Org. Chem*. **2004**, *69*, 1663-1669.

Yeiser, A. J., **Cox, J. R.** and Wright, S. N. "Voltage-Dependent Inhibition of Rat Skeleton Muscle Sodium Channels by Aminoglycoside Antibiotics". *Pflugers Arch.-Eur. J. Physiol.* **2004**, *448*, 204-213.

Carpenter, R. A., Farley, A. R., **Cox, J. R.**, Dobson, A. J. and Whitlock, C. W. "Synthesis and Structural Characterization of a Novel Tris-Indolyl Amine" *J. Under. Chem. Res.* **2004**, *1*, 11-14.

Keller, H. and **Cox, J. R.** "The Proteomics Stock Market Project: A Cross-Disciplinary Collaboration in Biochemistry and Business Education". *J. Chem. Educ.* **2004**, *81*, 519-522.

Honey, D. W. and **Cox J. R.** "Lesson Plan for Protein Exploration in a Large Biochemistry Class" *Biochem. Mol. Biol. Educ.* **2003**, *31*, 356-362.

Boehr, D. D., Farley, A. R., Wright, G. D. and **Cox, J. R.** "Analysis of the pi-pi Stacking Interactions Between the Aminoglycoside Antibiotic Kinase APH(3')-IIIa and Its Nucleotide Ligands". *Chemistry & Biology* **2002**, *9*, 1209-1217.

Cox, A. L. and **Cox, J. R.** "Determining Oxidation-Reduction on a Simple Number Line". *J. Chem. Educ.* **2002**, *79*, 965-967.

Canning, D. R. and **Cox, J. R.** "Teaching the Structural Nature of Biological Molecules: Molecular Visualization in the Classroom and in the Hands of Students" *Chem. Educ. Res. Prac.* **2001**, *2*, 109-122.

Peterson, R. R. and **Cox, J. R.** "Integrating Computational Chemistry into a Project-Oriented Biochemistry Laboratory Experience: A New Twist on the Lysozyme Experiment" *J. Chem. Educ.* **2001**, *78*, 1551-1555.

Cox, J. R., Ekman, D. R., DiGiammarino, E. L., Akal-Strader, A., and Serpersu, E. H. "Aminoglycoside Antibiotics Bound to Aminoglycoside-Detoxifying Enzymes and RNA Adopt Similar Conformations" *Cell Biochem. Biophys*. **2000**, *33*, 297-308.

Serpersu, E. H., **Cox, J. R.**, DiGiammarino, E. L., Mohler, M.L., Ekman, D. R., Akal-Strader, A., and Owston, M. "Conformations of Antibiotics in the Active Sites of Aminoglycoside-Detoxifying Enzymes" *Cell Biochem. Biophys*. **2000**, *33*, 309- 321.

Cox, J. R. "Teaching Noncovalent Interactions in the Biochemistry Curriculum Through Molecular Visualization: The Search for pi Interactions" *J. Chem. Educ*. **2000**, *77*, 1424-1428. (Cover Image)

Publications Prior to MSU

Mohler, M., Cox, J. R. and Serpersu, E. H. "Aminoglycoside Phosphotransferase (3')-IIIa (APH(3')-IIIa)-Bound Conformation of the Aminoglycoside Lividomycin A Characterized by NMR" *Carbohydr. Lett*. **1998**, *3*, 17-24.

Cox, J. R. and Serpersu, E. H. "Biologically Important Conformations of Aminoglycoside Antibiotics Bound to an Aminoglycoside 3'-Phosphotransferase as Determined by Transferred Nuclear Overhauser Effect Spectroscopy" *Biochemistry* **1997,** *36*, 2353-2359.

Cox, J. R., McKay, G. A., Wright, G. D., and Serpersu, E. H. "Arrangement of Substrates at the Active Site of An Aminoglycoside Antibiotic 3'-Phosphotransferase As Determined by NMR" *J. Am. Chem. Soc.* **1996,** *118*, 1295-1301.

Cox, J. R. and Serpersu, E. H. "The Complete ^{1}H NMR Assignments of Aminoglycoside Antibiotics and Conformational Studies of Butirosin A Through the Use of 2D NMR Spectroscopy" *Carbohydr. Res.* **1995,** *271*, 55-63.

Cox, J.R. NMR Studies of Aminoglycoside Antibiotics Bound to an Aminoglycoside Antibiotic 3'-Phosphotransferase. Ph.D. Dissertation, University of Tennessee-Knoxville (1997).

Cox, J.R. Liver Microsomal Lipid Peroxidation Induced by Chloropropanes. M.S. Thesis, Murray State University (1993).

BOOK CHAPTERS (PEER-REVIEWED)

Cox, J. R. "Take One Tablet and Transform Your Teaching and Student Learning." In Re-Imagining the Classroom (HP/ISTE) book series (in development)

Johnston, T. C. and **Cox, J. R.** "Divergence of the Proteins for Bacterial Bioluminescence Was Driven by GC Ratio Requirements for Bacterial Genomes." In *Bioluminescence and Chemiluminescence 2000*. Case, J. F., Herring, P. J., Robison, B. H., Haddock, S. H. D., Kricka, L. J., and Stanley, P. E., Eds.; World Scientific: London, 2001, 83-86.

OTHER PUBLICATIONS/CONTRIBUTIONS (NOT PEER-REVIEWED)

-These may include editor-reviewed articles, conference proceedings, commentaries, editorials, book reviews or media interviews.

Cox, J. R. "We Will Teach Them....How?" *International Journal for the Scholarship of Teaching and Learning* **2008**, 2(1) [Personal Reflection].

Cox, J.R. Invited Book Review for: *Aminoglycoside Antibiotics: From Chemical Biology to Drug Discovery*. Edited by Dev P. Arya (Clemson University). John Wiley and Sons, Inc. (ISBN: 978-0-471-74302-6). *Journal of the American Chemical Society*, **2007**, 129, 11873-11874.

Cox, J. R. Interviews with WKMS Radio (Murray State University) about the current crisis of antibiotic resistance and MRSA infections (October 2007).

Cox, J. R. and Rogers, J. W. "Tablet PCs: Are They the Next Technopedagogical Fad? *J. Coll. Sci. Teach.* **2005**, 34(6), 7. (Editorial)

Rogers, J. W. and **Cox, J. R.**, "In Defense of Lecture: Using Technology Inside and Outside the Classroom," 4th American Society for Engineering Education / Australian Association for Engineering Education Global Colloquium, Sydney, Australia, 2005. (6-page manuscript)

Rogers J. W. and **Cox, J. R.**, "In Defense of Lecture: Using Technology Inside and Outside the Classroom," American Society for Engineering Education Annual Conference and Exposition, Portland, Oregon, 2005. (6-page manuscript)

Cox, J. R. "In Defense of the High-Tech Lecture", View from the Front: A Web Forum for Perspectives on the Lecture Approach, Vol. 3, January 2005.

Cox, J. R. "Protein Data Bank Education Corner: Using Visualization Tools", Spring 2004 (No. 22), Protein Data Bank Newsletter, p. 6-7 (Invited Article).

PRESENTATIONS AND PRESENTATION ABSTRACTS

-Undergraduate students are underlined and graduate students are double underlined.
-A. Farley was both an undergraduate and graduate research student
-First name is presenting author

Presentations/Abstracts @ MSU

NATIONAL Meetings: Disciplinary Research

Shannon, B. J., **Cox, J. R.** and Johnson, D. Abstracts of Papers, 235th National Meeting of the American Chemical Society, New Orleans, LA; American Chemical Society: Washington, DC, 2008; CHED 883. Poster Entitled "Multipodal Anion Complexation by Gramicidin-Mimetic Cyclic Decapeptides: Evaluation by In Silico Screening"

Clark, J.-P. G., Mabry, R. P., Kelleher, M., **Cox, J. R.** and Masthay, M. B. *Abstracts of Papers*, 231st National Meeting of the American Chemical Society, Atlanta, GA; American Chemical Society: Washington, DC, 2006; CHED 1064. Poster entitled "Effects of pH and Non-native Cations on the Conversion of Halobacterial Purple Membrane to Laser-Induced Blue Membrane."

Boehr, D. D., Farley, A. R., LaRonde, F. J., Murdock, T. R., Al-Mestarihi, A., Wright, G. D. and **Cox, J. R.** *Abstracts of Papers*, 229th National Meeting of the American Chemical Society, San Diego, CA; American Chemical Society: Washington, DC, 2005; MEDI 356. Poster entitled "Molecular Recognition in the Adenine-Binding Region of an Aminoglycoside Antibiotic Kinase."

Murdock, T. R., Al-Mestarihi, A., Sperry, C., Perlin, M. H. and **Cox, J. R.** *Abstracts of Papers*, 229th National Meeting of the American Chemical Society, San Diego, CA; American Chemical Society: Washington, DC, 2005; CHED 899. Poster entitled "Using Diverse Aromatic Systems as Inhibitors of an Aminoglycoside Antibiotic Kinase."

Murdock, T. R., LeBaron, T. K., Perlin, M. H. and **Cox, J. R.** 18th National Conference on Undergraduate Research (NCUR®), Indianapolis, IN, April 15-17, 2004. Poster entitled: "Exploring the Adenine-Binding Region of Antibiotic Resistance Enzymes."

Farley, A. R., Murdock, T. R., Al-Mestarihi, A. and **Cox, J. R.** *Abstracts of Papers*, 227th National Meeting of the American Chemical Society, Anaheim, CA; American Chemical Society: Washington, DC, 2004; CARB 049. Poster entitled "Probing the Active Site of an Aminoglycoside Antibiotic Kinase with Nucleosides."

Welch, K. T., Whittemore, N. A., **Cox, J. R.**, Dougall, D. K., and Baker, D. C. *Abstracts of Papers*, 227th National Meeting of the American Chemical Society, Anaheim, CA; American Chemical Society: Washington, DC, 2004; CARB 032. Talk entitled "Investigation of the Relationship between Chemical Structure and Color Stability of Monoacylated Anthocyanins from *Daucus Carota*."

Farley, A. R. and **Cox, J. R.** National Science Foundation National EPSCoR Conference; Las Vegas, NV, September 8, 2003,. Poster entitled "Nucleotide Binding in the Active Site of an Aminoglycoside Phosphotransferase Enzyme (APH(3')-IIIa)."

Farley, A. R. and **Cox, J. R.** Posters on the Hill (Council on Undergraduate Research) in Washington, DC, April 1, 2003. Poster entitled "Nucleotide Binding in the Active Site of an Aminoglycoside Phosphotransferase Enzyme (APH(3')-IIIa)."

Musselman, E., Farley, A. R. and **Cox, J. R.** 15th National Conference on Undergraduate Research (NCUR®), Lexington, KY, March 15-17, 2001. Poster entitled: "Investigations into the Frequency and Nature of ⍰-Type Interactions in Proteins."

NATIONAL Meetings: Educational Research

Cox, J. R. The Teaching Professor Conference, Boston, MA, May 21-23, 2010. Delivered the closing Plenary Session wrapping up the conference. (Served as Chair of the conference).

Cox, J. R. The Teaching Professor Conference, Washington, DC, June 5-7, 2009. Talk entitled "Reflections on a Technology-Based Science Course: Dreams and Realities in the Age of Digital Learning." (Served as Co-Chair of the conference).

Cox, J. R. The Biennial Conference on Chemical Education (BCCE), Bloomington, IN, July 28-31, 2008. Talk entitled "Integrating Pen-based Technology into Chemical Education."

Cox, J. R. The Teaching Professor Conference, Orlando, FL, May 16-28, 2008. Talk entitled "Reflections on a Technology-Based Science Course: Dreams and Realities in the Age of Digital Learning." (Invited Presentation)

Cox, A. L. and **Cox, J. R.** Workshop on the Impact of Pen-Based Technology on Education (WIPTE), West Lafayette, IN (Purdue University), June 11-12, 2007. Poster entitled "One Tablet PC–Numerous Teaching and Learning Opportunities."

Rogers, J. W. and **Cox, J. R.** The Teaching Professor Conference, Atlanta, GA, May 18-20, 2007. Talk entitled "Student Attitudes and Learning Gains in Tablet PC-Enabled Courses." (Invited presentation based on survey results from a similar presentation at the 2006 conference)

Derting, T. D. and **Cox, J. R.** HP Technology for Teaching Worldwide Higher Education Conference, Monterey, CA, February 3, 2007. Poster entitled "A Campus-Wide Initiative to Develop, Deploy and Assess Five Models of Technology-Enhanced Teaching and Learning."

Rogers, J. W. and **Cox, J. R.** The Teaching Professor Conference, Nashville, TN, May 19-21, 2006. Talk entitled "Student Attitudes and Learning Gains in Tablet PC-Enabled Courses."

Rogers, J. W. and **Cox, J. R.** Hewlett-Packard National Online Presentation Series, May 12, 2006. Talk entitled "The One-Tablet Classroom: Methods, Student Attitudes and Learning Gains."

Ratliff, J. R., Anderson, J. E., **Cox, J. R.**, McCreary, T. W. and Owen, D. A. *Abstracts of Papers*, 228th National Meeting of the American Chemical Society, Philadelphia, PA; American Chemical Society: Washington, DC, 2004; CHED 224. Talk entitled "Changing Teaching Styles in Chemistry: New Traditions."

Cox, J. R. 18th Biennial Conference on Chemical Education, Iowa State University (Ames, IA), July 18-22, 2004. Talked entitled "Integrating Molecular Visualization into the Chemistry and Biochemistry Curriculum."

REGIONAL Meetings: Disciplinary Research

Meeim, W., Winkler, A., **Cox, J. R.**, and Banner, E. J. *Abstracts of Papers*, 60th Southeast Regional Meeting of the American Chemical Society, Nashville, TN, November 12-15; American Chemical Society: Washington, DC, 2008; BIOL 505. Poster entitled "Synthesis of 2-Aminopyrimidines as Probes of APH(3')-IIIa."

Shannon, B. J., **Cox, J. R.** and Johnson, R. D. 93rd Annual Meeting of the Kentucky Academy of Science. Louisville, KY, November 9, 2007. Poster entitled "In Silico Studies of the Anion-Binding Selectivies of Gramicidin-Inspired Cyclic Decapeptides."

Johnson, A., **Cox, J. R.** and Banner, E. J. 93rd Annual Meeting of the Kentucky Academy of Science. Louisville, KY, November 9, 2007. Poster entitled "Synthesis of Nitrogen-Heteroaromatic Compounds as Probes of APH(3')-IIIa."

Masthay, M. B., Kelleher, M. E., Jones, R. E., Lyles, A. D. , Gottschalk, G., McGregor, J. B., **Cox, J. R.** *Abstracts of Papers*, 57th Southeast and 61st Southwest Regional Meeting of the American Chemical Society, Memphis, TN; American Chemical Society: Washington, DC, 2005; PHYS 495. Talk entitled "Effects of pH and Non-native Cations on the Conversion of Halobacterial Purple Membrane to Laser-Induced Blue Membrane."

Murdock, T. R., Al-Mestarihi, A., Sperry, C., Perlin, M. H. and **Cox, J. R.** Posters-at-the-Capitol in Frankfort, KY, February 3, 2005. Poster entitled "A New Class of Inhibitors of Aminoglycoside Antibiotic Kinases."

Cox, J. R., Murdock, T. R., Sperry, C. S., Al-Mestarihi, A. *Abstracts of Papers*, 56th Southeast Regional Meeting of the American Chemical Society, Research Triangle Park, NC, November 10-14; American Chemical Society: Washington, DC, 2004; MED 576. Talk entitled "Utilizing Diverse Aromatic Structures to Block the ATP-Binding Site of Aminoglycoside Antibiotic Kinases."

Murdock, T. R. and **Cox, J. R.** 90th Annual Meeting of the Kentucky Academy of Science. Murray, KY, November 5, 2004. Talk entitled "Structure and Dynamics of a Tris-Indolyl Amine."

Sperry, C. S. and **Cox, J. R.** 90th Annual Meeting of the Kentucky Academy of Science. Murray, KY, November 5, 2004. Talk entitled "A New Class of Inhibitors of an Aminoglycoside Antibiotic Kinase." [2nd place in chemistry undergraduate research competition- C. Sperry]

LeBaron, T. K., Murdock, T. R., Perlin, M. H. and **Cox, J. R.** Posters-at-the-Capitol in Frankfort, KY, January 22, 2004. Poster entitled "Recognizing the Adenine Ring in Type IIa and IIIa Aminoglycoside Antibiotic Kinases."

Murdock, T. R., LeBaron, T. K., Perlin, M. H. and **Cox, J. R.** *Abstracts of Papers*, 55th Southeast Regional Meeting of the American Chemical Society, Atlanta, GA, November 16-18; American Chemical Society: Washington, DC, 2003; UNDERGRAD 1031. Poster entitled "Recognizing the Adenine Ring in Type IIa and IIIa Aminoglycoside Antibiotic Kinases."

Murdock, T. R., LeBaron, T. K., Perlin, M. H. and **Cox, J. R.** 89th Annual Meeting of the Kentucky Academy of Science, Bowling Green, KY, November 6-8, 2003. Poster entitled "Recognizing the Adenine Ring in Type IIa and IIIa Aminoglycoside Antibiotic Kinases."

Farley, A. R., Boehr, D. D., Wright, G. D. and **Cox, J. R.** *Abstracts of Papers*, 54th Southeast Regional Meeting of the American Chemical Society, Charleston, SC; American Chemical Society: Washington, DC, 2002; UNDERGRAD 722. Talk entitled "Nucleotide Binding in the Active Site of an Aminoglycoside Phosphotransferase Enzyme (APH(3')-IIIa)."

Farley, A. R. and **Cox, J. R.** Vanderbilt University Biomolecular Modeling Symposium, Nashville, TN, September 20-21, 2002. Poster entitled "Computational and Experimental Approaches to Combating Antibiotic Resistance."

Farley, A. R. and **Cox, J. R.** Posters-at-the-Capitol in Frankfort, KY, January 10, 2002. Poster entitled "Computational and Experimental Approaches to Combating Antibiotic Resistance."

Farley, A. R. and **Cox, J. R.** Joint Meeting of the Kentucky Academy of Science and Tennessee Academy of Science, Murfreesboro, TN, November 10, 2001. Talk entitled "The Geometry and Electrostatic Environment of the Nucleotide Binding Site of an Aminoglycoside 3'-Phosphotransferase."

Hossain, M., **Cox, J. R.**, and Liu, J. Joint Meeting of the Kentucky Academy of Science and Tennessee Academy of Science, Murfreesboro, TN, November 10, 2001. Talk entitled "Development of Model Systems to Study π Interactions in Proteins."

Yeiser, A., **Cox, J. R.**, and Wright, S. N. Joint Meeting of the Kentucky Academy of Science and Tennessee Academy of Science, Murfreesboro, TN, November 10, 2001. Talk entitled "Voltage-Dependent Block of Skeletal Muscle Sodium Sodium Channels by Aminoglycoside Antibiotics."

Farley, A. R. and **Cox, J. R.** *Abstracts of Papers*, 53rd Southeast Regional Meeting of the American Chemical Society, Savannah, GA; American Chemical Society: Washington, DC, 2001; UNDERGRAD 608. Talk entitled "The Packing of the Adenine Ring in Protein Complexes."

Musselman, E. and **Cox, J. R.** 86th Annual Meeting of the Kentucky Academy of Science. Lexington, KY, December 2, 2000. Talk entitled "Theoretical Investigations Into the Nature of π-Stacking Interactions in Proteins."

REGIONAL Meetings: Educational Research

Kohorst, K. and **Cox, J. R.** 14th Annual Instructional Technology Conference: Fostering a Participatory Learning Culture , Middle Tennessee State University, March 30, 2009. Talk entitled "Engaging Students in the Age of Interaction."

Cox, J. R. *Abstracts of Papers*, 60th Southeast Regional Meeting of the American Chemical Society, Nashville, TN, November 12-15; American Chemical Society: Washington, DC, 2008; CHED 807. Talk entitled "Reflections on a Technology-Based Chemistry Course: Dreams and Realities in the Age of Digital Learning." Presented in the "Technologies for the Chemistry Classroom" Symposium.

Kohorst, K. and **Cox, J. R.** Murray State University Engagement Conference: A Summit for the Higher Education Community, Murray, KY, February 28-29, 2008. Talk entitled "Engaging Students in the Age of Interaction."

Rice, H., Miller L. and **Cox, J. R.** Kentucky Conference on the Scholarship of Teaching and Learning: Engaging Campus and Community, Lexington, KY, May 14-15, 2007. Talk entitled "An Artisan's Approach: Using Tools of Technology to Engage Students."

Cox, J. R. *Abstracts of Papers*, 58th Southeast Regional Meeting of the American Chemical Society, Augusta, GA; American Chemical Society: Washington, DC, November 2, 2006; CHED/COMP 109. Talk entitled "Technology as a Catalyst for Improving Chemical Education."

Cox, J. R. Kentucky Conference on the Scholarship of Teaching and Learning: Redesigning Teaching and Learning for the 21st Century, Lexington, KY, May 24-25, 2006. Talk entitled "Confessions of a Faculty Member in a Teaching/Learning Center."

Miller, L., Rice, H. and **Cox, J. R.** 11th Annual Instructional Technology Conference: Fostering Successful Learning, Middle Tennessee State University, April 2, 2006. Talk entitled "A Kentucky-Wide Online Course to Demonstrate the Impact of Technology on Teaching."

Cox, J. R. *Abstracts of Papers*, 57th Southeast and 61st Southwest Regional Meeting of the American Chemical Society, Memphis, TN; American Chemical Society: Washington, DC, 2005; CHED 349. Talk entitled "Enhancing the Chemistry Lecture with Tablet PC Technology."

Cox, J. R. and Rogers, J. W. Kentucky Conference on the Scholarship of Teaching and Learning: Engaging Students for Success, Lexington, KY, May 22-23, 2005. Talk entitled "Enhancing the Lecture with Tablet PC Technology."

Cox, J. R. and Rogers, J. W. 90th Annual Meeting of the Kentucky Academy of Science. Murray, KY, November 5, 2004. Talk entitled "In Defense of Lecture: Using Technology Inside and Outside the Classroom."

Cox, J. R. Kentucky Conference on the Scholarship of Teaching and Learning: Student Success for Kentucky's Future, Lexington, KY, May 23-24, 2004. Talk entitled "Teaching with the SMART Sympodium."

Cox, J. R. *Abstracts of Papers*, 55th Southeast Regional Meeting of the American Chemical Society, Atlanta, GA; American Chemical Society: Washington, DC, 2003; CHED 278. Talk entitled "Teaching Chemistry with the SMART Sympodium."

Keller, H. and **Cox, J. R.** *Abstracts of Papers*, 54th Southeast Regional Meeting of the American Chemical Society, Charleston, SC, American Chemical Society: Washington, DC, 2002; CHED 27. Talk entitled "A Pedagogically-Driven Partnership in Business and Biochemical Education."

Cox, J. R. and Keller, H. Kentucky Conference on the Scholarship of Teaching and Learning: Innovations in Teaching and Learning: Meeting 21st Century Challenges, Louisville, KY, May 20-21, 2002. Talk entitled "Bridging Science and Business: A Unique Pedagogical Collaboration."

Cox, J. R. *Abstracts of Papers*, 53rd Southeast Regional Meeting of the American Chemical Society, Savannah, GA; American Chemical Society: Washington, DC, 2001; CHED 176. Talk entitled "Integrating Molecular Visualization Throughout the Biochemistry Curriculum" [*Organized symposium at SERMACS-01 entitled "Teaching Biochemistry"*].

Cox, J. R. The Kentucky Conference on Building a Scholarly Structure for Teaching and Learning, Bowling Green, KY, May 20-22, 2001. Talk entitled "Molecular Visualization in the Biochemistry Curriculum."

Peterson, R. and **Cox, J. R.** 23rd Annual Area Collegiate Chemistry Meeting, Martin, TN, April 15, 2000. Poster entitled "Development of a Computational Experiment for the Biochemistry Laboratory: A New Twist on the Lysozyme Experiment."

LOCAL Meetings: Disciplinary Research

Radaram, B., Banner, E. and **Cox, J. R.** Area Collegiate Chemistry Meeting. Martin, TN, April 10, 2010. Talk entitled "Design and Synthesis of Secondary Amidopyrroles."

Murdock, T. R., Al-Mestarihi, A., Sperry, C., Perlin, M. H. and **Cox, J. R.** MSU Scholars Week and Sigma Xi Poster Competition, Murray State University, April 19, 2005. Poster entitled "Using Diverse Aromatic Systems as Inhibitors of an Aminoglycoside Antibiotic Kinase."

Sperry, C. S. and **Cox, J. R.** Area Collegiate Chemistry Meeting. Murray, KY, April 15, 2005. Talk entitled "A New Class of Inhibitors of an Aminoglycoside Antibiotic Kinase."

Murdock, T. R., LeBaron, T. K., Perlin, M. H. and **Cox, J. R.** MSU Scholars Week and Sigma Xi Poster Competition, Murray State University, April 22, 2004. Poster entitled: "Exploring the Adenine-Binding Region of Antibiotic Resistance Enzymes." (TRM won the best undergraduate poster competition)

Farley, A. R., Al-Mestarihi, A. and **Cox, J. R.** Area Collegiate Chemistry Meeting, University of Tennessee at Martin, April 24, 2004. Talk entitled "Probing the Active Site of an Aminoglycoside Antibiotic Kinase with Nucleosides."

Murdock, T. R., LeBaron, T. K. and **Cox, J. R.** Area Collegiate Chemistry Meeting, University of Tennessee at Martin, April 24, 2004. Talk entitled: "Exploring the Adenine-Binding Region of Antibiotic Resistance Enzymes."

Farley, A. R. and **Cox, J. R.** MSU Scholars Week and Sigma Xi Poster Competition, Murray State University, April 22, 2003. Talk and poster entitled "Nucleotide Binding in the Active Site of an Aminoglycoside Phosphotransferase Enzyme (APH(3')-IIIa)."

Al-Mestarihi, A. and **Cox, J. R.** Area Collegiate Chemistry Meeting, Murray State University, April 12, 2003. Talk entitled "Non-Nucleoside Inhibitors of an ATP-Dependent Aminoglycoside Kinase."

Farley, A. R. and **Cox, J. R.** Area Collegiate Chemistry Meeting, Murray State University, April 12, 2003. Talk entitled "Nucleotide Binding in the Active Site of an Aminoglycoside Phosphotransferase Enzyme (APH(3')-IIIa)."

Farley, A. R. and **Cox, J. R.** Area Collegiate Chemistry Meeting, University of Tennessee at Martin, April 13, 2002. Talk entitled "New Insights into the Inhibition of an Aminoglycoside-Phosphotransferase Enzyme."

Farley, A. R. and **Cox, J. R.** MSU Scholars Week and Sigma Xi Poster Competition, Murray State University, April 22, 2002. Talk and poster entitled "Computational and Experimental Approaches to Combating Antibiotic Resistance."

Farley, A. R., Musselman, E. and **Cox, J. R.** CSET Research Day and Sigma Xi Poster Competition, Murray State University, April 18, 2001. Talk entitled "Investigations into the Frequency and Nature of pi-Type Interactions in Proteins."

Honey, D., Volp, R. F. and **Cox, J. R.** CSET Research Day and Sigma Xi Poster Competition, Murray State University, April 18, 2001. Poster entitled "Quantitative Structure-Activity Relationships for the Ability of Chloropropanes to Initiate Lipid Peroxidation."

Honey, D., Volp, R. F. and **Cox, J. R.** Area Collegiate Chemistry Meeting, Murray State University, April 7, 2001. Poster entitled "Quantitative Structure-Activity Relationships for the Ability of Chloropropanes to Initiate Lipid Peroxidation."

Farley, A. R. and **Cox, J. R.** Area Collegiate Chemistry Meeting, Murray State University, April 7, 2001. Talk entitled "The Packing of the Adenine Ring in Protein Complexes."

Musselman, E. and **Cox, J. R.** 23rd Annual Area Collegiate Chemistry Meeting, Martin, TN, April 15, 2000. Talk entitled "Theoretical Investigations Into the Nature of pi-Stacking Interactions in Proteins."

Musselman, E. and **Cox, J. R.** MSU Sigma Xi Meeting, Murray, KY, April 18, 2000. Poster entitled "Theoretical Investigations Into the Nature of π-Stacking Interactions in Proteins."

Harper, S., Wright, S., and **Cox, J. R.** MSU Sigma Xi Meeting, Murray, KY, April 18, 2000. Poster entitled "Charge Distribution of Neutral Local Anesthetics: Insights Into the Block of Voltage-Gated Na^+ Channels."

LOCAL Meetings: Educational Research

Cox, J. R. Center for Teaching, Learning and Technology (CTLT) Summer Blitz, 2010. Workshop entitled "Anatomy of Course Design."

Cox, J. R. Center for Teaching, Learning and Technology (CTLT) Summer Blitz, 2009. Workshop entitled "Blended Learning in All Disciplines."

Cox, J. R. Center for Teaching, Learning and Technology (CTLT) Summer Blitz, 2008. Workshop entitled "Giving Effective Presentations in PowerPoint and Beyond."

Cox, J. R. 10th Annual Murray State University Teaching, Learning and Technology Forum, Learning Spaces, September 22, 2007. Talk entitled "2007: A Learning Space Odyssey."

Cox, J. R. 9th Annual Murray State University Teaching, Learning and Technology Forum, The Artisanship of Teaching: Polishing the Tools of the Trade, September 14, 2006. Talk entitled "Have the Tools of Technology Improved Teaching/Learning? Definitely, Maybe…Come See the Data."

Cox, J. R. Murray State University Series on Teaching as Scholarly Work, March 11, 2005. Talk entitled "Effective Presentation: Faculty as Designers of Learning Experiences."

Rogers, J. W. and **Cox, J. R.** Center for Teaching, Learning and Technology Symposium: When Technology Enables Learning, March 10, 2005. Talk entitled "The Tablet PC in the Classroom and Beyond."

Cox, J. R., Durr, D., Rogers, J. and Keller, H. 7th Annual Murray State University Teaching, Learning and Technology Forum: Weighing the Impact of Technology in the Classroom, September 17, 2004. Panel entitled "In Defense of Lecture: Using Technology-Based Teaching Tools Inside and Outside the Classroom."

Cox, J. R., Rogers, J., Palmer, C., Wheatley, G. and McCarthy, M. 7th Annual Murray State University Teaching, Learning and Technology Forum: Weighing the Impact of Technology in the Classroom, September 16, 2004. Panel entitled "Tablet PCs in the Classroom."

Cox, J. R., Neberezny, P., Boldt, M. and Navan, J. 6th Annual Murray State University Teaching, Learning and Technology Forum: Our Changing Students, October 21, 2003. Panel entitled "Changing Teaching Styles to Reflect Changing Populations."

Cox, J. R., Keller, H., Miller, F. and Brown, M. Murray State University Teaching and Technology Forum, April 2002. Talk entitled "Teaching Outside the Box: Cross-Disciplinary Team Teaching."

Gray, J. and **Cox, J. R.** Murray State University Student Technology Forum, April 1, 2002. Talk entitled "Protein Exploration in Basic Biochemistry."

Cox, J. R. Murray State University Technology Forum, April 2001. Talk entitled "Moving Past the Syllabus: The Effective Use of Blackboard Software to Enhance Molecular Visualization in the Biochemistry Curriculum."

Dill, A. and **Cox, J. R.** Murray State University Student Technology Forum, April 2001. Talk entitled "The Use of RasTop in the Quest to Understand Biomolecular Structure."

Cox, J. R. Murray State University Technology Forum, April 2000. Talk entitled "Making Your Point Visually: Using Simulations and High Quality Graphics to Enhance Learning."

Cox, J. R. Murray State University, Department of Chemistry Seminar Program, November 20, 2000. Talk entitled "Using Blackboard Software to Enhance Communication in a Face-to-Face Course."

Lowry, A. and **Cox, J. R.** Murray State University Student Technology Forum in April 2000. Talk entitled "Enhancement of the Study of Structural Biochemistry Through the Use of Technology."

Invited Lectures/Panels (Disciplinary and Educational Research)

Cox, J. R. Murray State University and University of Tennessee at Martin Joint Sigma Xi Research Symposium, Martin, TN, February 24, 2007. Talk entitled "Structural Biochemistry: Collaborative Research at the Interface of Chemistry and Biology."

Cox, J. R., Wann, D. and Wiggins, M. College of Business and Public Affairs Faculty Development Seminar Panel, Murray State University, March 10, 2006. Session entitled "Successful Approaches to Balancing Teaching and Research."

Cox, J. R. Union University (Department of Chemistry), Jackson, TN, April 15, 2005. Talk entitled "In Defense of the (Well-Designed) Lecture: Using a Tablet PC to Teach Chemistry."

Cox, J. R. The University of Tennessee at Martin (Student Affiliates of the American Chemical Society), Martin, TN, February 10, 2004. Talk entitled "Biochemistry of Antibiotic Resistance."

Cox, J. R. The University of Mississippi (Department of Chemistry), Oxford, MS, October 16, 2003. Talk entitled "Molecular Recognition in an Aminoglycoside Antibiotic Kinase."

Cox, J. R. The University of Memphis (Department of Chemistry), Memphis, TN, October 17, 2003. Talk entitled "Molecular Recognition in an Aminoglycoside Antibiotic Kinase."

Cox, J. R. Center of Excellence for Structural Biology and the Department of Biochemistry and Cellular and Molecular Biology, University of Tennessee at Knoxville, October 2, 2002. Talk entitled "The Interaction of Aromatic Systems in Proteins: Implications in Teaching and Research."

Cox, J. R. Kentucky Lake Section of the American Chemical Society meeting on January 25, 2000. Talk entitled "The Role of Chemistry in Combating Antibiotic Resistance."

Workshops/Meetings Attended While @ MSU (no presentations)

Teaching for Understanding. This workshop was conducted by Dr. Diane Ebert-May from Michigan State University and sponsored by the Center for Teaching, Learning and Technology and Tablet PC grants funded through Hewlett-Packard and Microsoft, October 18, 2006.

Copyright Makeover: How to Have Better Friends and Happier Projects. This workshop was conducted by Dr. Dwayne Buttler from the University of Louisville and sponsored by the Provost's Office and the Center for Teaching, Learning and Technology, November 15, 2006.

EDUCAUSE 2005, Transforming the Academy: Dreams and Reality. October 18-21, 2005. Orlando, FL.

Teaching Online: The Impact of Technology on Course Design. This workshop was conducted through the Center for Teaching, Learning and Technology at Murray State University, March 14 – March 21, 2005.

Teaching Critical Thinking. This workshop was conducted by Dr. Christine Reimers, Director of the Center for Effective Teaching and Learning at the University of Texas at El Paso, through the Center for Teaching, Learning and Technology at Murray State University, April 7, 2005.

Higher Education Leadership Development Program. This workshop was conducted through the Office of the President at Murray State University, January 2004-May 2004.

Collaborative Course Redesign Retreat. This workshop was conducted by Dr. Carolyn Jarmon, Center for Academic Transformation at Rensselaer Polytechnic Institute, on May 25, 2004, at the University of Kentucky (www.center.rpi.edu).

Integrated Course Design: A Model for Creating Significant Learning Experiences. This workshop was conducted by Dr. Dee Fink, Director, Instructional Development Program and Adjunct Professor of Geology at the University of Oklahoma, , through the Center for Teaching, Learning and Technology at Murray State University, April 17, 2003.

Presentations/Abstracts Prior to MSU

Cox, J. R. *Georgia Journal of Science* **1999**, *57*, 49. The 1999 Georgia Academy of Science Meeting, Georgia Perimeter College, Lawrenceville, GA. Poster presented entitled "Visualizing Noncovalent Interactions in Protein Structures: In Search of π Interactions".

Brown, J., Wood, T., and Cox, J. R. *Georgia Journal of Science* **1999**, *57*, 43. The Georgia Academy of Science Meeting, Georgia Perimeter College, Lawrenceville, GA (March 1999). Talk entitled "The Role of π-Interactions in Protein Stability: The Case of an Aspartate-Tryptophan Interaction in the Human Growth Hormone Receptor".

Brown, J., Westberry, C., Cox, J. R., Whitlock, C. *Abstracts of Papers*, 51st Southeast Regional Meeting of the American Chemical Society, Knoxville, TN; American Chemical Society: Washington, DC, 1999; ORGN 345. Talk entitled "The Design and Synthesis of Novel Diketopiperazines to Study Weak Interactions in Proteins".

Serpersu, E. H., Ekman, D. R., Owston, M. A., Cox, J. R., DiGiammarino, E. L. *Abstracts of Papers*, 51st Southeast Regional Meeting of the American Chemical Society, Knoxville, TN; American Chemical Society: Washington, DC, 1999; BIOL 96. Talk entitled "Conformation(s) of Aminoglycoside Antibiotics in the Active Site of Aminoglycoside-Detoxifying Enzymes".

Whittemore, N. A., Cox, J. R., Dougall, D. K., and Baker, D. C. "Approaches to the Rational Design of Highly Colored, Stable Anthocyanins", Abstr. Papers EuroCarbX, Galway, Ireland, July 11-16, 1999; Abstr. OC-06, p. 106.

Whittemore, N. A., Cox, J. R., Dougall, D. K., and Baker, D. C. *Abstracts of Papers*, 217th National Meeting of the American Chemical Society, Anaheim, CA; American Chemical Society: Washington, DC, 1999; CARB 014. Talk entitled "Approaches to the Rational Design of Highly Colored, Stable Anthocyanins".

Brown, J., Westberry, C., Whitlock, C., and Cox, J. R. The Phi Kappa Phi Research Symposium at Georgia Southern University (April, 1999). Talk entitled "From Molecular Visualization to Computation: The Case of an Aspartate-Tryptophan Interaction in the Human Growth Hormone Receptor".

Brown, J., Westberry, C., Whitlock, C., and Cox, J. R. The Sigma Xi Undergraduate Research Competition at Georgia Southern University (April, 1999). Talk entitled "the Design and Synthesis of Novel Diketopiperazines to Study Weak Interactions in Proteins: From Molecular Visualization to Computation to Organic Synthesis".

Cox, J. R. "A Tale of Two Flexible Molecules: Consequences in the Phosphorylation of Aminoglycoside Antibiotics and the Color Stability of Anthocyanins" The University of Georgia (Department of Chemistry), Athens, GA, February 11, 1999.

Cox, J. R. "The Role of NMR and Computational Chemistry in the Determination of the Structure and Dynamics of Aminoglycoside Antibiotics and Anthocyanins" The University of Tennessee at Martin (Department of Chemistry), Martin, TN, October 8, 1998.

Cox, J. R., Whittemore, N. A., Dougall, D. K., and Baker, D. C. *Abstracts of Papers*, 50th Southeast Regional Meeting of the American Chemical Society, Research Triangle, NC; American Chemical Society: Washington, DC, 1998; ORGN 375. Talk entitled "The Structure and Dynamics of Monacylated Anthocyanins as Revealed by Quenched Molecular Dynamics and NMR Spectroscopy".

Whittemore, N. A., Baker, D. C., Dougall, D. K., Serpersu, E. H., and Cox, J. R. *Abstracts of Papers*, 214th National Meeting of the American Chemical Society, Las Vegas, NV; American Chemical Society: Washington, DC, 1997; CARB 67. Talk entitled "Molecular Modeling as a Tool to Predict the Conformation of Monoacylated Anthocyanins".

Serpersu, E. H., Cox, J. R., Mohler, M. L., Akal, A. and DiGiammarino, E. L. *Abstracts of Papers*, 213th National Meeting of the American Chemical Society, San Francisco, CA; American Chemical Society: Washington, DC, 1997; CARB 79. Talk entitled "Conformations and Arrangements of Aminocyclitol Antibiotics in the Active Site of Aminoglycoside Antibiotic-Modifying Enzymes".

Mohler, M., Cox, J. R., and Serpersu, E. H. *Biochemistry* **1996**, *35*, 9287. 212th National Meeting of the American Chemical Society, Orlando, FL. Poster entitled "The Conformation of Lividomycin A at the Active Site of An Antibiotic-Modifying Enzyme".

Cox, J. R., McKay, G. A., Wright, G. D., and Serpersu, E. H. *FASEB J*. **1995,** *9*, A1340. Joint meeting of the American Society for Biochemistry and Molecular Biology/Division of Biological Chemistry-American Chemical Society, San Francisco, CA. Poster entitled "Arrangement of Substrates at the Active Site of An Aminoglycoside Antibiotic 3'-Phosphotransferase (APH(3')-IIIa)".

Cox, J. R. and Volp, R. F. *Toxicologist* **1993,** *13*, 335. The Society of Toxicology meeting, New Orleans, LA. Poster entitled "Liver Microsomal Lipid Peroxidation Induced by Chloropropanes".

COURSES TAUGHT @ MURRAY STATE UNIVERSITY

CHE 105–Introductory Chemistry I
CHE 106–Introductory Chemistry II
CHE 111–Essentials of Chemistry
CHE 312–Organic Chemistry I
CHE 315–Organic Chemistry Lab I
CHE 329–Molecular Visualization in Chemistry
CHE 330–Basic Biochemistry
CHE 400–Chemical Literature
CHE 530–Fundamentals of Biochemistry I
CHE 537–Biochemistry Laboratory
CHE 540–Fundamentals of Biochemistry II
CHE 674–Special Topics in Biochemistry

GRANT SUPPORT

-Monetary values for some grants include matching funds

EXTERNAL GRANTS FUNDED @ Murray State University

Disciplinary Research or Instrumentation

"MRI: Acquisition of a 400-MHz NMR Instrument". National Science Foundation Major Research instrumentation Program for $203,990. 08/2009-07/2012. Principal Investigator: Kevin D. Revell, Co- Principal Investigators: **James R. Cox** and Edith J. Banner.

"Studies to Investigate the Protein-Based Molecular Recognition of the Adenine Ring". American Chemical Society-Petroleum Research Fund (Type B) for $50,000. 2003-2007. Principal Investigator: **James R. Cox**.

"In Silico Optimization of Inhibitors for Antibiotic Resistance Enzymes" Kentucky Biomedical Research Infrastructure Network (KBRIN) Faculty Fellowship for $10,000. 2004. Principal Investigator: **James R. Cox**.

"Development of a Microelectromechanical Sensor to Detect Biological Threat Agents". Kentucky Science and Engineering Foundation Grant (Emerging Ideas) for $28,886. Aug. 2004-Aug. 2005. Principal Investigator: James W. Rogers, Co-Principal Investigators: **James R. Cox** and John B. Crofton.

"Inhibitor Design and Modeling of Antibiotic Resistance Enzymes" Kentucky Biomedical Research Infrastructure Network (KBRIN) Faculty Fellowship for $10,000. 2003 Principal Investigator: **James R. Cox**.

"The Development of Model Systems to Study the Interaction of Aromatic Systems in Proteins" Kentucky NSF EPSCoR Research Enhancement Grant for $37,580. 2002-2004. Principal Investigator: **James R. Cox**.

"Experimental and Theoretical Investigations into pi-Stacking Interactions in Protein Complexes". Kentucky NSF EPSCoR Research Enhancement Grant for $19,000. 2001-2002. Principal Investigator: **James R. Cox**.

"The Role of pi Interactions in Antibiotic Resistance". Kentucky NSF EPSCoR Research Enhancement Grant for $16,850. 2000-2001. Principal Investigator: **James R. Cox**.

"Understanding Protein-Based Molecular Recognition Phenomena Using Computational Chemistry". Kentucky Academy of Science Special Research Program Award, $12,800. 2000-2001. Principal Investigator: **James R. Cox**.

Educational Research or Teaching (Single PI)

"An Expanded Adoption and Evaluation of the One-Tablet Model of Instruction," Microsoft Research Tablet PC Technology, Curriculum, and Higher Education Grant for $75,000. 2008-2009. Principal Investigators: **James R. Cox** and J.W. Rogers

"Track II: An Interdisciplinary Approach to Assess the Educational Value of the One-Tablet Classroom". Microsoft Tablet PC Technology, Curriculum, and Higher Education Grant for $95,000. 2006-2008. Principal Investigator: **James R. Cox** (additional 7 faculty collaborators from CSET). This grant was one of only 11 grants awarded internationally in 2006.

"A Campus-Wide Initiative to Develop, Deploy and Assess Five Models of Technology-Enhanced Teaching and Learning" 2006 Hewlett-Packard Technology for Teaching Grant for $110,000. 2006-2007. Principal Investigator: Terry L. Derting (Biological Sciences) and Co-Principal Investigator: **James R. Cox**.

"Integrating Inquiry-Based Teaching and a Technology-Rich Environment to Improve Student Learning" 2004 Hewlett-Packard Technology for Teaching Grant for $61,000. 2004-2005. Principal Investigator: Terry L. Derting (Biological Sciences), Co-Principal Investigators: **James R. Cox** and Linda Miller (Center for Teaching, Learning and Technology).

"Chemistry Education in the Kentucky Lake Section of the American Chemical Society". American Chemical Society Local Section Innovative Projects Grant for $2,000. 2004. Principal Investigators: **James R. Cox** and Charles Baldwin (Union University).

"The Utilization of a SMART Sympodium in Large Chemistry Classes". 2003 SMARTERkids Foundation Grant ($1,000). Principal Investigator: **James R. Cox**.

"Integration of SMART Technology into a Technology-Enhanced Chemistry Classroom". 2002 SMARTERkids Foundation Grant for $3,900. Principal Investigator: **James R. Cox**.

"Establishing New Traditions in Chemistry at Murray State University". National Science Foundation CCLI-Adaptation and Implementation Grant for $307,960. 2001-2003. Principal Investigator: Judy L. Ratliff; Co-Principal Investigators: Jeffrey E. Anderson, **James R. Cox**, Mark B. Masthay and Terry W. McCreary.

A proposal to The Howard Hughes Medical Institute: 2000 Undergraduate Biological Sciences Education Program for $1,500,000. Program Director: John F. Mateja and Participants: **James R. Cox** and 9 other faculty members from Departments of Chemistry and Biology.

INTERNAL GRANTS FUNDED @ Murray State University

Disciplinary Research

"The Search for New Inhibitors of Antibiotic Resistance Enzymes". MSU Committee on Institutional Studies and Research (CISR) Grant for $1,800. 2013-2014. Principal Investigator: **James R. Cox**.

"The Role of Halogen Bonding in the Design of Inhibitors of Antibiotic Resistance Enzymes". MSU Committee on Institutional Studies and Research (CISR) Grant for $1,800. 2008-2009. Principal Investigator: **James R. Cox**.

"Blocking the Activity of an Enzyme Involved in Antibiotic Resistance". MSU Committee on Institutional Studies and Research (CISR) Grant for $1,400. 2007-2008. Principal Investigator: **James R. Cox**.

"Hydrogen Bond Traps: A New Approach to Inhibiting Antibiotic Resistance Enzymes". MSU Committee on Institutional Studies and Research (CISR) Grant for $2,000. 2003-2004. Principal Investigator: **James R. Cox**.

"The Use of Small Molecules to Investigate pi-Type Interactions in Proteins". MSU Committee on Institutional Studies and Research (CISR) Grant for $2,000. 2002-2003. Principal Investigator: **James R. Cox**.

"The Interplay of Experiment and Theory in the Investigation of pi-Type Interactions in Protein Systems". MSU HHMI Faculty Development Grant for $20,000. 2001-2002. Principal Investigators: **James R. Cox** and Timothy C. Johnston (Biological Sciences).

"Understanding the Nature and Energetics of pi-interactions in Proteins Through Computational and Experimental Methods". Marshall and Annette Gordon Chemistry Research Grant for $1,500. 2000-2001. Principal Investigator: **James R. Cox**.

"Isotope Labeling of an Enzyme Involved in Antibiotic Resistance". MSU Committee on Institutional Studies and Research (CISR) Grant for $2,500. 2000-2001. Principal Investigator: **James R. Cox**.

Educational Research or Teaching

"Student-Friendly Molecular and Mathematical Software in Chemical Education" 2004 Murray State University Faculty Development Grant ($956). Principal Investigators: Jin Liu, Pablo Molina and James R. Cox.

"Molecular Visualization Using a Pocket PC" Murray State University Faculty Development Grant for $1,000. 2002. Principal Investigator: **James R. Cox**.

"Integrating Computational Chemistry and Molecular Visualization in the Chemistry Curriculum". Murray State University Technology Trust Fund Grant, $400. 1999-2000. Principal Investigator: **James R. Cox**.

OTHER GRANTS FUNDED (Not at Murray State University)

"Molecular Visualization and Modeling in the Biochemistry Curriculum". Georgia Southern University Academic Excellence Committee for $200.1998-1999. Principal Investigator: **James R. Cox**.

"The Perdeuteration of an Aminoglycoside 3'-Phosphotransferase", Georgia Southern University Faculty Research Committee for $2,400. 1998-1999. Principal Investigator: **James R. Cox**.

GRADUATE RESEARCH (MS) STUDENTS

William Michael Chance (current graduate student in Chemistry at the University of South Carolina). Michael has completed his course work and research and just needs to complete and defend his MS thesis

Basker Radaram. (graduate student in chemistry). Thesis title: Design, Synthesis and Molecular Modeling of Amidopyrroles. This work was in collaboration with Dr. Edie Banner. Bhasker received his MS in Chemistry in May 2010 and is currently a Ph.D. candidate at the University of Rhode Island.

Adam Farley (graduate student in chemistry). Thesis title: Investigations into the Nature and Energetics of the Active Site of an Aminoglycoside Phosphotransferase Enzyme: APH(3')-IIIa. Adam received his MS in Chemistry in December 2004. Adam was also an undergraduate research student (see below). Adam completed his Ph.D. in Biochemistry at Vanderbilt University in 2012.

Mahmud Hossain (graduate student in Chemistry). Project title: "The Design and Synthesis of Model Compounds to Study pi-Type Interactions in Proteins". Mahmud received his MS in Chemistry in August 2004. He is currently a Ph.D. candidate at the University of Cincinnati.

Ahmad Al-Mestarihi (graduate student in Chemistry). Project title: "Probing the Molecular Determinants Needed to Block the ATP-Binding Site of an Aminoglycoside Antibiotic Kinase". Ahmad received his MS in Chemistry in August 2004. He is currently a Ph.D. candidate in the Department of Chemistry at Vanderbilt University.

Shea Godwin-Harper (graduate student in Biology; co-advisor Sterling Wright). Thesis entitled "A Computational Model of Neutral Local Anesthetic Interaction with Voltage-Gated Sodium Channels". Shea received her MS degree in May 2001. Shea graduated from the College of Medicine at the University of Kentucky.

UNDERGRADUATE RESEARCH STUDENTS

*Sam Pellock (***Fall 2012-current***).* Sam is investigating the program Fold-It to use in research and education-related projects.

Ashley Winkler (**Fall 2007-Spring 2011, Honors Thesis**). Ashley investigated the ability of novel aromatic systems to block the activity of enzymes involved in antibiotic resistance. She is currently a law student at the University of Kentucky.

Kelly Kohorst (**Spring 2007-Fall 2007**). Kelly investigated the role of Tablet PC technology in enhancing integrative learning. Kelly graduated from Vanderbilt University School of Medicine in 2012.

Glenn Alex Chalker (**Fall 2006-Spring 2007**). Alex investigated the molecular recognition of heterocyclic compounds in the active site of APH(3')-IIIa, an enzyme involved in antibiotic resistance. This work is important in that it may reveal how H-bonds and a pi-pi stacking interaction in proteins work in concert to bind aromatic substrates.

Tera Rica Murdock (**Spring 2003-Spring 2006**). Tera Rica was involved in a project that utilizes computational methods to investigate the structural nature of novel tris-indolyl amines. These are tripodyl systems designed to mimic the TRENSOX compounds, which are currently used in the treatment iron-overload diseases. She also studied substrate and inhibitor binding in the active site of an aminoglycoside antibiotic-modifying enzyme involved in antibiotic resistance (APH(3')-IIIa). She was a MSU Howard Hughes Medical Institute Undergraduate Research Scholar for the summer of 2003. She is a graduate of the Vanderbilt University School of Law.

Christopher Sperry (**Fall 2004-Spring 2005**). Christopher used computational methods to study how small aromatic systems can block the nucleotide-binding site of antibiotic resistance enzymes. He graduated from the School of Medicine at the University of Louisville.

Trenton LeBaron (**Spring 2003-Spring 2004**). Trent tested small non-nucleoside aromatic systems as potential inhibitors of APH(3')-IIIa, an aminoglycoside antibiotic-modifying enzyme involved in antibiotic resistance. He was a MSU Howard Hughes Medical Institute Undergraduate Research Scholar for the summer of 2003. Trent graduated from the College of Dentistry at the University of Kentucky.

David Honey (**Fall 2000-Spring 2002**). David investigated the electronic and conformational nature of monocylated anthocyanins and working on quantitative structure-activity relationships for chloropropane-initiated lipid peroxidation. David graduated from Dental School at the University of Louisville.

Beth Morgan (**Fall 2000-Spring 2002, Honor's Thesis**). Beth investigated the packing of the guanine ring in protein complexes. This research was the basis for Beth's Honor Thesis. Beth graduated from Medical School at the University of Kentucky.

Andrew Dill (**Spring 2001-Spring 2002**). Andrew developed methods to output high-resolution images from molecular visualization software. Andrew graduated from Dental School at the University of Louisville.

Edward Musselman (**Fall 1999-Spring 2001**). Ed studied proteins that bind ATP and looking for pi-type interactions. He also learned to use Hyperchem, a molecular modeling program, and performed a variety of *ab initio* quantum-mechanical calculations.

Rachel Peterson (**Fall 1999-Spring 2001**). Rachel investigated the prevalence of pi-type interactions in proteins and developed a computational experiment for Experimental Biochemistry (CHE 537). Rachel recently obtained her Ph.D. in Chemistry at Vanderbilt University.

Jesse Brown (**Fall 1998-Spring 1999 at Georgia Southern University**). Jesse used computational methods to investigate intermolecular forces used to stabilize the structure of proteins. Jesse is currently working for the Georgia Bureau of Investigations.

UNIVERSITY SERVICE AND PROFESSIONAL ACTIVITIES

Department of Chemistry

A. Departmental representative on MS and Honors thesis committees:

Je Chol Lee (M.S., Summer 2000, Department of Chemistry)

Misty Gish (M.S., Summer 2001, Department of Biological Sciences)

Ethan Richard (M.S., Summer 2001, Department of Biological Sciences)

Charissa Richard (M.S., Summer 2001, Department of Biological Sciences)

Tim Followell (Honors, Fall 2001, Department of Chemistry)

Zheng Yu (M.S., Spring 2003, Department of Chemistry)

Clay Spencer (M.S., Fall 2003, Department of Biological Sciences)

Paxton Baker (M.S. Fall 2004, Department of Biological Sciences)

Neil Vowels (M.S. Spring 2004, Department of Chemistry)

Pattraranee Limphong (M.S. Fall 2004, Department of Chemistry)

Hsin Hua Lin (M.S. Summer 2005, Department of Biological Sciences)

Stacie Richardson (M.S. Fall 2005, Department of Chemistry)

Robert Karingithi (M.S. Summer 2007, Department of Chemistry)

Crystal Rose (M.S. Summer 2007, Department of Biological Sciences)

Jessica Etheridge (M.S. Spring 2008, Department of Biological Sciences)

Ramesh Utharala (M.S. Spring 2009, Department of Chemistry)

Victoria England (M.S. Spring 2009, Department of Biological Sciences)

Widchuda Meeim (M.S. Fall 2009, Department of Chemistry)

Nanditha Billa (M.S. Spring 2010, Department of Chemistry)

Michael Creed (M.S. Spring 2011, Department of Biological Sciences)

Hannah Flood (M.S. Fall 2012, Department of Biological Sciences)

Saleh Saeed S. Alarfaji (M.S. Spring 2013, Department of Chemistry)

Yuchen Zhang (M.S. Summer 2013, Department of Chemistry)

Michael Cooper (M.S. Summer 2013, Department of Biological Sciences)

B. Departmental Committees

1. Search committee for organic chemist (1999-2000), physical chemist (2002-2003, 2007-2008), department chair (2004), organic chemist (search #1, 2005-2006), organic chemist (search #2, 2005-2006), and analytical chemist (2006), organic chemist (2009), inorganic chemist (2009) and organic chemist (2010).

2. Frequent attendance at departmental curriculum committee meetings and have participated in the process of re-certifying chemistry courses in the undergraduate studies program.

3. Textbook selection committee for CHE 105/106 (GOB) [2001 (chair) and 2005]

C. Seminar Coordinator (2000-2002, 2006-2009)

Coordinated numerous graduate student seminars (literature and research) and hosted numerous outside speakers.

D. Coordinator for Special Seminar Series (2001-present)

1. Gary Boggess Distinguished Lecture in Chemistry
2. Distinguished Chemistry Alumni Seminar in Honor of Professor Howell Clark

E. Webmaster (1999-present) and Technology Coordinator (2003-present)

Designed and maintain departmental web page to provide information about the department and highlight accomplishments and initiatives of faculty, students and staff.

F. Advising and Recruitment

I have advised over 50 pre-medical and pre-dental students and have met with 25 prospective students and their families who came to visit campus and the department.

G. Peer Review of Teaching

I served as a peer reviewer in the evaluation of teaching performance of probationary faculty members (Fall 2007, Fall 2008 and Fall 2009).

H. Miscellaneous

1. Performed various duties in the annual Chemistry Scholarship Tournament

2. Represented the department at numerous recruiting events such as Fall Senior Day (2004), Academic Excellence Weekend (2004), Regional College Fair (2006-2009), Junior Jam (2005), Summer Orientations (July 2006, July 2007 and July 2008).

3. Attended May 2005, December 2005, May 2006 and May 2008 Commencement Ceremonies

4. Appeared on Roundabout Murray Television Program to discuss research associated with antibiotic resistance (week of Nov. 21, 2005). Interviewed by WKMS radio about the problem of antibiotic resistance (March 2008).

College of Science, Engineering and Technology

A. Collegiate Committees

1. CSET Technology Committee (2000-present).

2. Pre-Medical/Pre-Dental Evaluation Committee (2000-present). This committee is composed of faculty from chemistry and biological sciences and meets on an annual basis to evaluate candidates for medical and dental school. Served as Chair in 2009.

3. Kentucky-wide committee on improving the quality and quantity of math/science teachers [2+2], sponsored by the Council on Postsecondary Education (2006-2007)

4. CSET BOR Teaching Excellence Award Committee (2006-2008).

5. CSET Budget Review Team (Fall 2012)

B. Howard Hughes Medical Institute Initiative (Biomedical Sciences Program, 2000-2004)

1. Webmaster for HHMI and Biomedical Sciences pages

2. Seminar coordinator for Biomedical Sciences Program (2000-2001)

3. Drafted the original application for HHMI Undergraduate Research Scholars Program

4. Participated in numerous meetings to help structure and implement the various initiatives of the HHMI program.

5. Organized the purchase of $160,000 of equipment for the Molecular

Biology/Biochemistry laboratory

6. Gave presentation at 2002 Steering Committee Meeting about faculty-mentored research with undergraduates

C. Miscellaneous

1. Time keeper in the Department of Energy/CSET Science Bowl (2000-2001)

University Service

A. MSU SACSCOC Accreditation Writing Team for Standard 3.4.12 (2012)

This team was responsible for writing the document addressing SACS standard 3.4.12 (*The institution's use of technology enhances student learning and is appropriate for meeting the objectives of the programs. Students have access to and training in the use of technology*).

B. MSU SACSCOC Quality Enhancement Plant Focus Group and Selection Committee (2012)

I served as the lead writer for a white paper to propose that the 2014+ Quality Enhancement Plan for MSU be focused on the role of technology in teaching and learning.

C. MAP Works Oversight Committee (2012-present)

This committee advises the Provost's Office on applications and uses of MAP Works, the university's software application for student retention.

D. University Research Policy Committee (2004-2007)

1. Chair of the Committee (2006-2007)

2. Presentation to the MSU Board of Regents on activities of the Research Policy Committee and the effect of 9-month faculty contracts on research activity (December 8, 2006)

3. Coordinator for a Faculty Research Focus Group to advise the Research Policy Committee on ways to break down barriers to research at MSU. (Spring 2007)

E. Enterprise Resource Planning (ERP) Selection Committee (2006-2007)

This committee was charged with selecting the ERP product for the university. This will be the software system used for online registration, electronic grade submission and much more. In essence, this software system will integrate the electronic data at MSU and bring us into the 21st century as far as registration, advising, workflow and data mining. My participation in this process was significant as a served as academic affairs team captain during the needs analysis. Overall, I spent approximately 50 hours in meetings, demonstrations and reading the various vendor responses to our call for proposals.

F. MSU Service Task Force (2007)

This committee only met one time under the direction of Dr. Sandra Jordan, Associate Provost. We discussed the various collegiate definitions of service, outreach and stewardship.

G. Graduate Studies Committee and Academic Council (2003-2005)

During my time on the academic council and graduate studies committee, I read and helped edit numerous proposals for new courses and curricula across campus.

H. Executive Committee of the Academic Council (2003-2004)

During my time on this executive committee, we met twice to discuss the format of syllabi to be placed on the Provost's web site.

I. Committee on Institutional Studies and Research (2004-2008)—CSET Representative

This committee awards small grants to faculty members across campus to enhance research and scholarship. I am one of the representatives from CSET and typically evaluate approximately 30 regular proposals and two to three Presidential CISR applications each year.

J. Committee to select the recipient of the Ralph H. Woods Memorial Award (2005)

This committee was established to select an outstanding graduating senior based on university service and leadership.

K. Faculty advisor to the National Society of Collegiate Scholars (NSCS, 2000-2002)

This is an honor society established in November 2000 to embrace academic achievement across the campus. NSCS is present on many of the finest universities in the nation.

L. E-mentor in the New Faculty Cohort/Colleague Program (2000-present)

This is a program administered through the MSU Center for Teaching, Learning and Technology. During the school year, monthly meetings are used to familiarize new faculty with various aspects of the university, such as advising and grant opportunities. E-mentors are included to share their own experiences and to assist new faculty while they adjust to the university community.

M. Member of the Student Technology Advisory Board (2001-2003)

This board was established to draft guidelines and procedures for the student competitions in the annual MSU Technology Forum.

N. Reviewed Organic Chemistry in the AHEC MCAT review program (2000-2006)

The Purchase Area Health Education Center (AHEC) sponsors a program in the Spring semester where science faculty members review material that is found on the medical admissions test (MCAT).

O. Scholar's Week Activities

Moderator for Science and Mathematics Symposium (2003 and 2004)

Professional Activities

A. Frequent Reviewer for Leading Research and Education Journals

Carbohydrate Research (3 manuscripts)

Journal of Chemical Education (15 manuscripts, 4 web sites)

Journal of Computational Chemistry (1 manuscript)

Protein Science (1 manuscript)

Biomacromolecues (1 manuscript)

Bioorganic and Medicinal Chemistry Letters (2 manuscripts)

Journal of the American Chemical Society (1 manuscript)

Chemistry Education: Research and Practice (1 manuscript)

Biophysical Chemistry (1 manuscript)

Biochemistry (4 manuscripts)

Journal of Molecular Biology (2 manuscripts)

Nucleic Acids Research (1 manuscript)

Manuscript review for WILEY: Jossey Bass entitled "From Learning Theory to the STEM College Classroom" by E.J. Mastascusa, W. J. Snyder and B. Hoyt (April 2009)

B. Grant Reviewer

American Chemical Society--Petroleum Research Fund (Type AC)—2005

National Science Foundation (1 grant--Molecular and Cellular Biosystems)—2006

National Science Foundation (5 grants—Organic Synthesis: Bioorganic and Macromolecular/Materials)—2006-2009

Kentucky Academy of Science Grant Review Committee (2004-present; 68 grants)

C. Textbook Reviews:

Organic Chemistry, 5th. Edition, Frances A. Carey

Essential Biochemistry, 1st Edition, Charlotte W. Pratt and Kathleen Cornley

General, Organic and Biological Chemistry, 4th and 5th Edition, John McMurry and Mary Castellion

Principles of Biochemistry, 5th Edition, Horton *et al*.

D. Kentucky Lake Section of the American Chemical Society (KLS-ACS)

1. Chair-Elect (2002)

2. Chair (2003)

-Section received 2003 ChemLuminary Award for Outstanding ACS Student Affiliate Interaction

-Section received 2004 Outstanding Event for the General Public Using the Chemists Celebrate Earth Day Theme

3. Past Chair and Newsletter Editor (2004)

-Received Innovative Activities grant

4. Webmaster for the local section (2001-present)

5. Frequently attend meetings to interact with chemistry faculty and industrial chemists from around the region

6. Nominations Chair (2009)

E. Other

External Peer Review of Promotion Packet (Full Professor) for the Division of Science, The Pennsylvania State University Berks Campus.

MAJOR COLLABORATIONS

Research Collaborations at Murray State University

Dr. Daniel Johnson (Chemistry). Our research groups are using computational methods to design cyclic peptides in an effort to develop new sensors for biologically important anions.

Dr. Kevin Revell (Chemistry). Our research groups are working to develop probe molecules in an effort to study the molecular recognition of the adenine ring in protein systems.

Dr. David Canning (Biological Sciences). My research group is using computational methods to develop molecular models of the interaction between N-Cadherin and Chondroitin Sulfate, a process that may be important in cell development. Our molecular models will complement the experiments performed in Dr. Canning's lab.

Dr. Sterling Wright (Biological Sciences). For several years, my research group worked with the lab of Dr. Wright to investigate molecular determinants of local anesthetic action and the ability of aminoglycoside antibiotics to block sodium channels. This work is now complete and resulted in a MS Thesis for Shea Godwin-Harper and two publications in research journals.

Dr. Tim Johnston (Biological Sciences). For approximately one year, our research groups investigated the role of aromatic amino acids in bioluminescent bacteria. This work is now complete and resulted in an editor-reviewed conference proceeding (see *Other Publications* section)

Dr. Jamie Rogers (Engineering and Physics) and **Dr. John Crofton** (Engineering and Physics). For two years, my research group worked with Drs. Crofton and Rogers in an effort to design a novel microelectromechanical sensor based on molecular recognition. Phase I of this work is complete and was funded through a grant from the Kentucky Science and Engineering Foundation.

Research Collaborations External to Murray State University

Dr. Greg Tschumper, Associate Professor, Department of Chemistry, University of Mississippi. Dr. Tschumper is an expert in the application of computational methods to chemical and biological systems. We have an active collaboration in the area of pi-stacking interactions in proteins. I am a named participant in his current grant from the National Science Foundation.

Dr. Gerard D. Wright, Professor and Director, Antimicrobial Microbial Research Center, Department of Biochemistry, McMaster University. I have had a productive collaboration with Dr. Wright since I arrived at MSU. Our research labs have and continue to investigate the biochemistry of enzymes involved in antibiotic resistance. Our students have given numerous national and regional presentations on this work and two manuscripts have been published in leading research journals. A great deal of the work in my lab was funded through grants obtained from Kentucky EPSCoR (Experimental Program to Stimulate Competitive Research, Kentucky Biomedical Research Infrastructure Network (KBRIN) and the American Chemical Society-Petroleum Research Fund (ACS-PRF).

Dr. Michael H. Perlin, Professor, Department of Biology, University of Louisville. Dr. Perlin is an expert in the area of antibiotic resistance. Our labs collaborate in an effort to discover novel inhibitors of enzymes that detoxify aminoglycoside antibiotics. This work has led to several national and regional presentations. This work has been funded through the Kentucky Biomedical Research Infrastructure Network (KBRIN).

Dr. Christine Whitlock, Associate Professor, Department of Chemistry, Georgia Southern University. This collaboration involved the synthesis and structural characterization of tris-indolyl amines, and interesting class of molecules due to their fluxional nature. This project is complete and resulted in a publication dedicated to undergraduate research.

Teaching/Technology Collaborations at Murray State University

Undergraduate Students. In many cases, I have asked students in my courses to participate in my educational research projects and help write manuscripts for publication. To date, I have published four papers with six students in my courses: **Rachel Peterson**, **David Honey**, **Kelly Kohorst**, **Heather Lyles**, **Brian Roberson**, and **Michael Mangino**.
Heath Keller (Management, Marketing and Business Administration)**.** A few years back, Heath and I developed a cross-disciplinary project for our biochemistry and business students. This unique project was described in a paper published in the *Journal of Chemical Education*.

Dr. Jamie Rogers (Engineering and Physics). Dr. Rogers and I have worked together to develop and assess a one-tablet model of instruction that has been the subject of many national and regional publications. For example, in 2007, we were invited back to The Teaching Professor Conference to given a presentation on the role of pen-based technology in science and engineering education. This work has been funded by Hewlett-Packard and Microsoft tablet PC grants and resulted in two publications and one editorial. Dr. Rogers and I are currently working on a NSF grant to further expand and develop the one-tablet model of instruction.

Dr. Terry Derting (Biological Sciences). I worked with Dr. Derting to write two successful Hewlett-Packard tablet PC grants. The last grant was one of only 10 renewal grants awarded across the country. Dr. Derting has also assisted me in analyzing statistical data that was a major component of a paper recently submitted to the *Journal of Chemical Education* (not mentioned in the *Publications* section).

Drs. Renee Fister and Maeve McCarthy (Mathematics and Statistics). I have also had the pleasure of working with Drs. Fister and McCarthy in the core group that began the MSU tablet PC project. Dr. McCarthy and I developed the student attitudinal survey that has been given to nearly 1000 students on campus to investigate the educational value of tablet-based instruction.

Microsoft Tablet PC Grant Participants. There are several faculty members participating in the Microsoft Tablet PC grant in which I am the Principal Investigator. This grant was only one of 11 tablet PC grants awarded internationally in 2006. Other universities receiving an award included Virginia Tech, Pontificia Universidade Catolica (Rio de Janeiro, Brazil), University of Washington, and University of California at Riverside. Besides Drs. Rogers, Derting, Fister and McCarthy, there are several other faculty members across campus that have been involved with this grant. These include **Dr. Sue Sroda** (English and Philosophy), **Dr. David Durr** (Economics and Finance), **Dr. Leigh Johnson** (Accounting), **Dr. Brenda Wilson** (Computer Science and Information Systems), **Dr. Ted Thiede** (Engineering and Physics), **Dr. John Crofton** (Engineering and Physics), **Dr. Bob Volp** (Chemistry) and **Dr. Kevin Revell** (Chemistry), **Dr.Ted Porter** (Mathematics and Statistics) and **Dr. Omer Yayenie** (Mathematics and Statistics).

Murray State Tablet PC Website: *http://campus.murraystate.edu/academic/tablet/*

Teaching/Technology Collaborations External to Murray State University

Amy Cox (Paducah Tilghman High School). My wife and I developed a new method to identify and characterize oxidation-reduction in introductory chemistry courses. This method was published in the *Journal of Chemical Education* (reference #8 in the *Publications* section) in 2002. More recently, we have worked to develop uses of the tablet PC appropriate in high school science curricula. In June 2007, we presented a poster at the Workshop on the Impact of Pen-Based Technology on Education (WIPTE) at Purdue University.

West Kentucky Science Alliance. I have worked with this alliance of high school science teachers, which is coordinated by Steve Traynham (TQI), in the area of instructional technologies.