Blakely McQuiston Adair, Ph.D.

Curriculum Vitae

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Education

Ph.D. Environmental Toxicology 2002 Texas Tech University, Lubbock, TX
*An Assessment of Exposure to and Accumulation of Mixed Metals in European Starlings (*Sturnus vulgaris*) Inhabiting Artificial Nest Boxes on a Smelter Contaminated Waste Site.*

M.S. Environmental Toxicology 1997 Clemson University, Clemson, SC
A Micro Digestion Technique for Mercury Analysis of Biological Samples Applied to Environmental Site Assessment.

B.S. Chemistry 1994 College of Charleston, Charleston, SC

Job History

Assistant Professor	Department of Chemistry	Aug. 2011-present
The Citadel		Charleston, SC
Adjunct Faculty		2010/2011
The Citadel	Department of Chemistry	Charleston, SC
Visiting Assistant Professor		2009/2010
College of Charleston	Chemistry and Biochemistry Department	Charleston,SC
Adjunct Faculty		2008/2009
College of Charleston	Chemistry and Biochemistry Department	Charleston,SC
Research Chemist/ NRC Post-Doctoral Fellow		2007-2009
National Institute of Standards and Technology	Analytical Division	Charleston, SC
Research Assistant		April-August 2007
North Carolina Central University	Environ. Earth and Geospatial Sci. Dept.	Durham, NC
Toxicologist/ NHEERL Post-Doctoral Fellow		2002-2006
US Environmental Protection Agency	Experimental Toxicology Div.	RTP, NC
Graduate Research Assistant		1997-2002
Texas Tech University	Environmental Toxicology Dept.	Lubbock, TX
Graduate Teaching Assistant		1996
Clemson University	Environmental Toxicology Dept.	Clemson, SC
Graduate Research Assistant		1995-1997
Clemson University	Environmental Toxicology Dept.	Clemson, SC

Teaching and Mentoring

The Citadel 2010-present

Assistant Professor 2011-present
Course Title (course number) years taught, cumulative number of students taught

General Chemistry Lab for Engineers (CHEM 141): 2016-2017, 27 students
Single semester chemistry lab for mechanical and electrical engineers. The lab covers a condensed overview of chemical concepts needed to pursue an engineering degree. I prepared a section specific syllabus along with pre- and post-lab discussion points to help students perform the labs. Then I made quizzes that combined with turn-in sheets assess student data collection and understanding of the labs. I presented rubrics and set-up grading spreadsheets to more easily and accurately assess results.

General Chemistry Lecture, Chemistry Majors (CHEM 153): 2015, 12 students total
First chemistry class for chemistry majors. To improve retention and speed up incorporation of research into the chemistry curriculum, a separate section was created. I developed additional assignments and began incorporating laboratory components into lecture materials.

General Chemistry Lecture (CHEM 151): 2011-2017, 345 students total
First chemistry class for science majors and some math and engineering majors.
My goal is to explain theoretical chemical concepts and to provide students with the tools necessary for scientific problem solving. I have implemented clicker based questions into the lecture to provide immediate feedback of student understanding. I am working to incorporate problem-based learning strategies, but the large class sizes and large amount of material to cover make it difficult.

General Chemistry Lab (CHEM 161/CHEM 162): 2012-2015, 125 students total/ 2015, 40 students total
First chemistry lab for science, and some math and engineering majors. The goal of these labs is to emphasize, demonstrate, and explore major concepts discussed in the lecture sections.

Biochemistry Lab (CHEM 460): 2011-2012, 8 students total
I used the biochemistry lab as a way to incorporate real-world sample preparation and analysis techniques into the theoretical content of the lecture. Students learn laboratory techniques commonly performed in biochemistry labs. Biological molecules examined include amino acids, proteins and DNA. These molecules were isolated, quantified, and the results used to answer varying questions. Forensic assessment of DNA fragments after PCR amplification and fingerprint analysis were used to determine the murderer in a mock case. Students used real-time analysis of UV signal changes to determine the kinetic rate of protein enzymes.

Teaching and Mentoring Cont.

Instrumental Analysis Combined Lecture and Lab (CHEM 302): 2012-2018, 49 students total
The purpose of the class is to provide students with a basic understanding of tools used in collecting samples and analyzing chemicals. The goal is not to make students expert instrumental chemists but to recognize the parameters that should be accounted for when designing a study or quantifying any compound or element. I use lecture to introduce theoretical aspects of analytical chemistry and the lab to introduce applications of the techniques. Students use instruments and equipment common in research and industrial labs. They change settings, perform maintenance, and research the theory of signaling. Some examples are: UV-vis, FTIR, ICP-OES, AAS, GC-MS, MS, GC-FID LC-UV/Fluorescence, manual injections

Introductory Chemistry Lecture II (CHEM 104): 2014, 2016, 2017 86 students total
In addition to the work and assessment I did as an adjunct professor, I have added on-line homework as part of a goal of the chair of the introductory committee to examine the usefulness of on-line homework. I have also used small student presentations throughout the semester to improve participation and add to student responsibility for learning.

Honors Research (HONR 400): 2012, 1 mentor 1 second reader
I have served as primary mentor and secondary reader to students performing multidisciplinary independent study. In these classes, I have discussions with students about individual topics and help them synthesize a cumulative report.

Senior Research (CHEM 419/420): 2012-2017, 9 (advisor) and 6 (2^{nd} reader) students
The Senior Research class is the Capstone class for Chemistry students getting a BS in chemistry with an ACS certification. As the primary mentor, I guide students through forming the hypothesis and into the study design. Then, I help students implement the study by helping them with theoretical, mechanical, and logistical components associated with performing research. Then, my students present different aspects of their research at Citadel Research Poster session, National Conference, and by oral presentation to the department. The final research paper and oral defense will prepare students for the rigors of graduate school or the workplace.

Student Research Mentor (no course number): 2012-2014, 5 students total
During summer research students have the opportunity to perform more intense or in depth research than during the school year. They are also able to work without the concern of a grade. The summer 2012 included work setting up the laboratory and a new instrument. A rising sophomore was able to learn about study design, sampling techniques and instrument optimization. I guided her through the design and performance of sampling procedures. Then, I taught her how to use the ICP-OES and the intricacies of the instrument. The other student was a rising senior who began his senior research project.

Teaching and Mentoring Cont.

An assessment of temporal distributions of metals in water and sediment samples collected from coastal South Carolina. 2014

I worked with a Wideman fellow on a methods development project to concentrate metals from water samples collected along the Ashley River.
I worked with another student from Vanderbilt University to develop protocols and organize materials for better implementation of the project.

Adjunct Professor, The Citadel 2010-2011

Introductory Chemistry Lecture (103/104) and Lab (113/114): Introductory for non-science majors, two-semester classes.
My goal is to introduce students to chemical concepts and how those concepts relate to everyday life. I used problem-based learning strategies to assist students with interpretation and understanding of basic chemical concepts. I used homework, quiz, and in-class participation as resources for continuing assessment.

College of Charleston 2008-2010

Visiting Assistant Professor/ Adjunct Professor

General Chemistry Lecture: Introductory for science majors, two-semester class
I applied problem-based learning strategies to assist students with interpretation and understanding of basic chemical concepts. I used homework, quiz, and in-class participation as resources for continuing assessment. PowerPoint, You Tube, and other electronic resources provided visual aids to describe such concepts as molecular orbitals and equilibrium.

General Chemistry Lab: Introductory for science majors, two-semester class
Instructed students in procedures, techniques, and basic theoretical concepts related to the introductory laboratory practices. Prepared, distributed, and graded assignments, laboratory notebooks, and projects. To improve clarity of the lab manual, I re-wrote two exercises of a 5 exercise project. I took full advantage of the teacher work-station in the laboratory to integrate laboratory and lecture concepts.

National Institute of Standards and Technology

Hollings Scholar Mentor Summer 2008

I assisted a rising college senior with design, implementation, and interpretation of a summer project to isolate and quantify a protein using biochemical techniques. He presented results at the end of the summer, and the data will be used for future work incorporating analytical and biological techniques for more accurate quantification of proteins and elements in biological samples.

Teaching and Mentoring Cont.

North Carolina Central University
Research Assistant April-August 2007
I taught four students the theory of chemical fate and transport in river systems. I trained them in and helped with field sample collection procedures. They performed instrument calibration, field collection, daily monitoring, data entry, and some data processing using GLP-type QA/QC procedures.

I supervised and assisted students as they participated in community outreach events in Environmental Justice communities. They demonstrated sampling techniques, explained why we were sampling, and how the community could help make their streams safer.

Students also participated in data interpretation. Students, colleagues, and I have presented results at community and scientific meetings.

US Environmental Protection Agency 2002-2007
I mentored a new post-doc from Mexico City. I taught theory and applications of HG-AAS for As speciation analysis. I helped troubleshoot instrument and sample preparation problems. I helped with misunderstandings from cultural differences.

Teaching and Mentoring Cont.

Texas Tech University, Lubbock, TX 1997-2002

Graduate Research Assistant

I was mentor to two master's students that I collaborated with on different projects. I taught both laboratory procedures and theoretical concepts. I guided them through instrument problems by showing them how to make repairs, find resources, and use manuals and tools. I discussed and described data analysis techniques and helped with interpretation. I gave advice about dealing with different faculty members.

I taught graduate and undergraduate students basic laboratory procedures focusing on GLP-based methodology with an emphasis on preparation and analysis techniques for metals determinations in biological samples.

Clemson University, Clemson, SC

Graduate Teaching Assistant 1997

Analytical Toxicology: Graduate level course. I ordered all supplies and prepared standards and equipment for all lab projects. I helped teach theoretical concepts and techniques of environmental residue analysis for organic and inorganic contaminants.

Graduate Research Assistant 1995-1997

I trained researchers and students to use and maintain the atomic absorption spectrometer (AAS). Sample introduction systems included graphite furnace, flame, and continuous flow cold vapor. I also trained students in sample preparation methods for analysis on the AAS.

Governor's School Student Mentor 1995, 1996

As mentor, I helped guided and trained three gifted high school students with summer research. I trained them on methods, helped trouble shoot instrument and method problems, and helped interpret results.

Trident Technical College, Charleston, SC

Laboratory Instructor 1994-1995

General Chemistry: Introductory level class. Remedial Chemistry: Preparatory level class. Prepared, distributed, and graded assignments, laboratory notebooks, and projects. I designed lesson plans, set up, and maintained all a lab equipment and supplies. Instructed students in both the laboratory procedures and the basic theoretical concepts related to the labs.

Research Experience by Project

The Citadel 2011-2013

Release rate of patent-pending fertilizer formulation (The Citadel Foundation funding)

This project was primarily implemented by my research student. I helped him research analysis methods and guided him through the method development and optimization of sample preparation and quantification methods of urea in the fertilizer and soil samples that were provided by the inventor. Then, I helped him process and interpret the data.

An assessment of temporal distributions of metals in water and sediment samples collected from coastal South Carolina. 2014-2016

Metal deposition into estuaries from natural and anthropogenic sources can have deleterious effects on biota in and around the water. Soluble metals or forms that can be extracted under the conditions found in brackish waters often represent the bioavailable fraction. Therefore, changes in metal concentrations in the available fraction due to tidal and other episodic events most be examined and modeled before other parameters such as risk to wildlife can be examined. The current study will examine the metal concentrations in surface water and sediment samples collected from tidal creeks over a six month period in Charleston, SC. Then, multivariate statistics will be employed to examine the interactions between physical and chemical parameters.

Accumulation of metals in fish along the Ashley River 2015-present

Working with SC Department of Natural Resources, fish were collected for analysis in October over multiple years to examine the accumulation differences among fish species within and between years. The results of three different student researchers were incorporated into the project and published.

National Institute of Standards and Technology (NIST) 2007-2011

Metals quantification in archived fur seal tissues using ICP-MS 2011

I worked with Clay Davis to design the sampling plan which included the number of replicates for preliminary screening. After screening, I helped interpret results and determine which analytes were present at quantifiable concentrations. Then, I coordinated, implemented, and performed the sample preparation, instrumental optimization, sample analysis, and preliminary data interpretation. The results will be incorporated into a manuscript that includes multiyear data of metals and organic contaminants. This data can help track contaminants on a temporal scale not commonly available.

Research Experience Cont.

(NIST cont)

Element-specific Metalloprotein Quantification (NRC post-doc) 2007-2009
This NRC post-doctoral fellowship was granted through a proposal and recommendation process. Results of the project will allow quantification of metalloproteins by metal cofactors or elemental labels with elemental detection using ICP-MS. This process will yield more precise and accurate protein quantification over a larger concentration range than current biochemical methodologies. The procedures developed can be implemented to create standard methods or standard reference materials and increase the capabilities of NIST in the biochemical field of proteomics.

My interactions with researchers from different departments at NIST in Gaithersburg and collaborations with researchers at the Hollings Marine Lab and partner institutes resulted in a metallomics research focus of metals quantification in biological systems. This new focus will promote a large initiative for biologically related quantification of elements at NIST.

Standard Reference Material (SRM) Certification 2009-2010
I collaborated with another NIST researcher to optimize a microwave assisted extraction procedure with the final goal of arsenic species certification in fish tissue and rice SRMs. My report of analysis was approved; therefore, certification of arsenic species in rice will continue. The certification is planned for this summer.

Certification of thiocyanate, nitrate, and perchlorate in urine requires a second quantification method. I have verified that thiocyanate and nitrate can be detected in negative ion mode with electrospray ionization mass spectrometry under conditions seen during anion exchange separation. I am designing the study to verify separation of thiocyanate and nitrate on the column for use in the certification.

Research Experience Cont.

North Carolina Central University April-August 2007

Environmental Risk and Impact in Communities of Color (ERICC): Durham Project (US-EPA cooperative agreement 2001-2007)
Due to mitigating circumstances, I was hired to meet a completion deadline for a water quality assessment that was part of a community based participatory research program in an Environmental Justice (EJ) community. Dialog with community members illustrated concerns of soil contamination from junkyard leaching and run-off. However, logistical and legal issues prompted a change in design to a broader approach addressing creek health and impacts of contaminant run off from industrial sources.

I revised the study design, wrote a quality assurance project plan (QAPP), wrote standard operating procedures, and set up a data management system.

To complete sampling and integrate the training program of the agreement with EPA, I hired and trained 4 students to assist with sample collection, water quality measurements, data entry, and

QA procedures. For efficiency and QA/QC, I contracted a field technician with water quality assessment experience and an analytical lab to quantify organic and inorganic contaminants of concern in water and sediment samples.

I coordinated students, staff, faculty, and contractors to collect, process, and analyze the data. The results have been presented at conferences and in technical reports and published in a proceedings paper.
The results of chemical analysis and established infrastructure will also be used by the community, NCCU, and EPA to continue interactive examination of EJ issues in the area.

US Environmental Protection Agency (EPA)

Automated HG-AAS system development 2006
As liaison between visiting scientists and staff, I helped trouble shoot equipment issues resulting from integrating a Perkin Elmer FIAS-200, a 5100 AAS, and a cryogenic column system using multiple relays. I coordinated with electrical and mechanical staff to build parts, I ordered supplies, and assisted with language barrier issues.

I optimized sample introduction and instrument parameters to quantify trimethyl arsines of iAs, MMAs, and DMAs in tissue digests and urine from mice dosed with DMAsIII and DMAsV to determine As metabolism and tissue distribution from studies listed below.

Research Experience Cont.

EPA Cont.

Laser assisted HG-AFS for quantification of As compounds 2004-2006

I collaborated with a contractor to build a laser based detector. I researched and recommended materials for basic construction. I acted as liaison between the contractor, electrical staff, laser health safety officials, and shop technicians. My analytical skills were tapped to integrate the hydride generation and auto-sampler with the new detector.

DMAsV Dosing Study in female 344 rats 2005-2006

As team leader of an interdisciplinary research group, I helped design a dosing study to incorporate analytical and metabolic concepts so results could be compared with carcinogenic study results and could be incorporated in PBPK models.

To increase efficiency and accuracy of dosing, I helped change water bottles and analyzed dosing solutions.

To save time and money, I coordinated, trained, and supervised a technician to perform acid digestions on tissues that I analyzed with HG-AAS for iAs, MMAs, DMAs, and TMAO.

I collaborated with researchers in Cincinnati to identify two new thiol containing As metabolites with HPLC-ICP-MS.

I processed the data, interpreted results, and worked with co-authors to prepare the publication.

Arsenic Metabolism by the As(3+)MT Enzyme in Rat, Mouse, and Human 2005-2006

I optimized instrument parameters that incorporated emerging analytical techniques to quantify and identify radio labeled arsenic metabolites from in vitro studies.

I quantified inorganic and methylated arsenic metabolites using HPLC- scintillation for reactions with C^{14} labeled SAM or inorganic As^{73} or using HG-AAS for metabolites from non-labeled reactions.

I helped interpret preliminary results and plan future trials as we examined the impact of reaction parameters.

To increase efficiency, I trained a biology post-doc to use and maintain the HPLC-UV scintillation instrument.

Research Experience Cont.

EPA cont.

Solid Phase Extraction (SPE) of Urine for Speciation Arsenic Metabolites 2004-2005

I designed and performed SPE for all optimization and validation trials and assisted with HG-AAS analysis of raw urine and eluent to determine iAs, MMA, DMA III and V.

I modified the column and solution parameters from a field SPE method originally used to separate iAsIII and iAsV in water. I used multiple urine reference materials to optimize the technique for separating iAs, MMAs, and DMAs III's from V's in urine.

Field validations of the procedure are under way in Mexico. The validated procedure will provide quantitation of toxic metabolites that are unstable under field conditions.

Total Arsenic in Biomarker and Metabolism Studies 2002-2005

I optimized and validated a total acid digestion technique to quantify low concentrations of total arsenic in urine, blood, and toenails with HG-AFS.

I compared results from the validated digestion with HG-AFS analysis to NA analysis to determine which method was most useful. And I proved that toenails are a useful biomarker of exposure. Results are published in a peer reviewed journal.

I analyzed biological samples using the validated arsenic preparation technique to verify that all arsenic metabolites are accounted for in speciation analyses for multiple projects. I assisted with write-up and interpretation of results for three publications.

Research Experience Cont.

Texas Tech University

Wildlife Biomonitoring at the Anaconda Smelter Site. (NIEHS/ USFWS/ EPA)
The study incorporated field monitoring with tissue residue and biomarker data from rodents, passerines, and small raptors inhabiting a superfund site. My dissertation work incorporated and expanded on the passerine data.

My assistance with the quality assurance plan reduced contamination during field collection and resulted in collection of field and lab control samples to assure the lack of contamination.

To meet GLP requirements, I researched and negotiated a special order for Certified metals free clean bottles and jars for all analytical samples collected in the field.

I set up and maintained a field laboratory, where live animals collected in the field were euthanized then necropsies were performed to collect tissues for biological and analytical endpoints.

To assure data accuracy, meet GLP requirements, and meet project deadlines

1. I created or optimized, validated, performed, scheduled and trained 10 students and 3 staff to perform the following procedures
   a-Acid digestion techniques for metals quantitation in tissues, insects, and excrement from rodents and birds.
   b-Analysis methods with GF-AAS and a new ICP-OES that a collaborator and I set up and optimized in a month.
   c-QC procedures and documentation for field and laboratory accuracy verification.
   d-QA protocols to check raw data, computer entry, and calculations in field, biochemical, and analytical labs.
   e-A Microsoft ACCESS database that I helped design and manage.

2. I processed, compiled and formatted all analytical data from two instruments, 5-11 metals in about 1000 rodent and avian samples collected over a two year period.

Dissertation Component
I assured that nest boxes were distributed over the range of metal contamination on-site using data from EPA's Baseline Ecological Risk Assessment (BERA) of the site for a representative study design. I helped assemble and position the nest boxes at designated locations.

To collect and process data efficiently and accurately, I developed monitoring protocols and forms for nest box activity, nestling growth, and food item collection and identification. In the field, I monitored nest boxes and documented nest building, egg laying (order, number of eggs), hatching (dates, success), nestling growth (measured weight, wing, and tarsus), fledging success. I performed esophageal constrictions on nestlings to collect prey items, and monitored adults for feeding activity. I collected and performed necropsies of nestlings from the field.

Research Experience Cont.

Texas Tech Cont.
To perform tasks properly and assure consistency between people, I trained 3 summer workers to perform all field and GLP procedures using the protocols and forms required for passerine studies.

The results of metal concentrations in bird tissues and food were combined with field data in presentations, reports, and a publication submitted for review.

I developed a linear regression post canonical correlation technique that accounts for impacts of multiple metals in describing metal distribution. The procedure is will be published in a peer reviewed journal.

I examined and interpreted biomarker responses, such as ALAD activity and porphyrin profiles in blood, to determine the risk to birds from metals exposure and plan to submit for publication.
Advisors, Dr. George P Cobb and Dr. Michael J Hooper (PI). 1998-2002

Effects of DDT Exposure in White Crown Sparrows during Migration
I helped feed and water birds, and plan dosing and flight schedules which considered dose concentration, flight duration, and hormone fluctuations.
As quality control lead, I assured proper collection, storage, and tracking of tissues for biochemical and analytical analysis.
Assisted with instrumental trouble-shooting of the GC-MS.
Supervisor, Edward J Scollon, PhD candidate, dissertation project. 2000-2001

Porphyrin Profile and Chelator Techniques in Mercury Exposure and Effects Assessment (NIEHS)
I developed and validated a basic digestion procedure and manual CV-AAS analysis technique for mercury speciation (inorganic and monomethyl) in biological tissues to incorporate into a chelator treatment study.
I analyzed project samples and trained a student assistant to continue the project.
Supervisors, Dr. George P Cobb and Dr. Michael J Hooper (PI). 1997-1999

Research Experience Cont.

Clemson University

Graduate Research Assistant 1995-1997

Prothonotary Warblers as Monitors of DDT and Mercury Exposure at an Alabama Superfund Site (NIEHS/Ciba and Olin Corporations)

I was the chemist on a multidisciplinary team with biologists and eco-toxicologists that examined risk to birds from Hg and DDT exposure on a NPL site.

On the field team, I monitored nest boxes for nesting activity and nestling growth and success, and collected prey items. My observations of adult behavior during nest box monitoring lead to a more efficient design for a simultaneous radio telemetry study.

I developed, validated the preparation (acid digestion) technique needed to quantify low Hg concentrations in small kidney and food samples.

Other researchers and I have presented and published results using the acid digestion method.

I developed contour plots and used partial correlation analysis to examine Hg distribution and uptake in soils, invertebrate food items, and nestling kidneys. I presented and published the findings.

Supervisors, Dr. George P. Cobb and Dr. Scott T McMurry (PI) 1995-1997

Metals Quantification in Fish from Ponds and Lakes in Russia (USAID)

I assisted visiting scientists from Russia with fish tissue preparation and metals analysis on GF-AAS by training and troubleshooting instrument issues and clarifying English translations on presentations. Supervisor, Dr. George P Cobb. 1996

Assessment of Effects in Silver-dosed Fish (Photographic Imaging Manufacturers Assn.)

Collected tissue and water samples and assisted with residue analysis of silver on GF-AAS.

Supervisors, Dr. George P Cobb and Dr. Thomas W La Point (PI). 1995-1996

Passive Sampling Devices for Terrestrial Waste Sites (NIEHS)

I helped with pesticide doping of soil and with subsequent extraction of soil using passive sampling devices for GC-ECD analysis.

Kevin Johnson, PhD candidate, dissertation project. 1995

Peer Reviewed Publications

*Student co-authors who participated in some combination of the study design, sample collection, quality assurance/control procedures, analysis, and interpretation.

BM Adair, BT Molnar*, and P Intravichit*. 2017. Metals in Spotted Seatrout (*Cynoscion nebulosus*) collected from the Ashley River, Charleston, SC. *Journal of Undergraduate Chemistry Research.* 16 (3): 91-94.

BM Adair and LV McAfee. 2018. Chemical Pursuit: A modified Trivial Pursuit® Game. *Journal of Chemical Education*. http://dx.doi.org/10.1021/acs.jchemed.6b00946 (Web February 01, 2018)

SJ Christopher, EL Kilpatrick, LL Yu, WC Davis, BM Adair. 2012. Preliminary evaluation of a microwave-assisted metal-labeling strategy for quantification of peptides via RPLC–ICP-MS and the method of standard additions. *Talanta*. 88: 749-758.

HJ Clewell, RS Thomas, EM Kenyon, MF Hughes, BM Adair, PR Gentry, JW Yager. 2011. Concentration- and Time-dependent Genomic Changes in the Mouse Urinary Bladder Following Exposure to Arsenate in Drinking Water for up to 12 Weeks. *Toxicological Sciences*. 123: 421-432.

EM Kenyon, MF Hughes, BM Adair, JH Highfill, EA Crecelius, HJ Clewell, JW Yager. 2008. Tissue distribution and urinary excretion of inorganic arsenic and its methylated metabolites in C57BL6 mice following subchronic exposure to arsenate in drinking water, *Toxicology and Applied Pharmacology*, 232:448-455.

MF Hughes, V Devesa, BM Adair, SD Conklin, JT Creed, M Stýblo, EM Kenyon, DJ Thomas. 2008. Tissue dosimetry, metabolism and excretion of pentavalent and trivalent dimethylated arsenic in mice after oral administration. *Toxicology and Applied Pharmacology.* 227: 26-35.

A Hernández-Zavala, T Matoušeka, Z Drobná, DS Paul, F Walton, BM Adair, J Dědina, DJ Thomas, M M Stýblo. 2008. Speciation analysis of arsenic in biological matrices by automated hydride generation-cryotrapping-atomic absorption spectrometry with multiple microflame quartz tube atomizer (multiatomizer). *Journal of Analytical Atomic Spectrometry*. 23:342-351.

T Matoušeka, A Hernández-Zavala, M Svoboda, L Langrová, BM Adair, Z Drobná, DJ Thomas, M Stýblo, and J Dědina. 2008. Oxidation state specific generation of arsines from methylated arsenicals based on l-cysteine treatment in buffered media for speciation analysis by hydride generation-automated cryotrapping-gas chromatography-atomic absorption spectrometry with the multiatomizer. *Spectrochemica Acta B.* 63:396-406.

BM Adair, T Moore, SD Conklin, JT Creed, DC Wolf, DJ Thomas. 2007. Tissue distribution and urinary excretion of dimethylated arsenic and its metabolites in dimethylarsinic acid- or arsenate-treated rats. *Toxicology and Applied Pharmacology*. 222: 235-242.

Peer Reviewed Publications cont.

DS Paul, A Hernández-Zavala, FS Walton, BM Adair, J Dědina, T Matoušek, M Stýblo. 2007. Examination of the Effects of Arsenic on Glucose Homeostasis in Cell Culture and Animal Studies: Development of a Mouse Model for Arsenic-Induced Diabetes. *Toxicology and Applied Pharmacology*. 222: 305-314.

DJ Thomas, J Li, SB Waters, W Xing, BM Adair, Z Drobna, V Devesa and M Styblo. 2007. Arsenic (+3 Oxidation State) Methyltransferase and the Methylation of Arsenicals. *Experimental Biology and Medicine*. 232:3-13.

DE Fomenko, W Xing, BM Adair, DJ Thomas, VM Gladyshev. 2007. High-throughput identification of catalytic redox-active cysteine residues. *Science*. 315, January 19: 387-389.

V Devesa, BM Adair, J Liu, MP Waalkes, BA Diwan, M Styblo, DJ Thomas. 2006. Arsenicals in maternal and fetal mouse tissues after gestational exposure to arsenite. *Toxicology.* 224:147-155.

BM Adair, EE Hudgens, MT Schmitt, RL Calderon, DJ Thomas. 2006. Total arsenic concentrations in toenails quantified by two techniques provide a useful biomarker of chronic arsenic exposure in drinking water. *Environmental Research*. 101: 213-220.

KD Reynolds, MS Schwarz, CA McFarland, TJ McBride, BM Adair, RE Strauss, GP Cobb, MJ Hooper, ST McMurry. Northern pocket gophers (Thomomys talpoides) as biomonitors of environmental metal contamination. 2006. E*nvironmental Toxicology and Chemistry*. 25:458-469.

M F Hughes, V Devesa, B M Adair, M Styblo, E M Kenyon and DJ Thomas. 2005. Tissue dosimetry, metabolism and excretion of pentavalent and trivalent monomethylated arsenic in mice after oral administration. *Toxicology and Applied Pharmacology*, 208: 186-197.

V Devesa, LM DelRazo, BM Adair, Z Drubna, SB Waters, MF Hughes, M Styblo, DJ Thomas. 2004. Comprehensive analysis of arsenic metabolites by pH-selective hydride generation atomic absorption analysis. *Journal of Analytical Atomic Absorption Spectroscopy*, 19: 1460-1467.

BM Adair, KD Reynolds, ST McMurry, GP Cobb. 2003. Mercury Occurrence in Prothonotary Warblers (Protonotaria citrea) Inhabiting a National Priorities List Site and Reference Areas in Southern Alabama. *Archives of Environmental Contamination and Toxicology*, 44: 265-271.

TR Rainwater, BM Adair, SG Platt, TA Anderson, GP Cobb and ST McMurry. 2002. Mercury in Morelet's crocodile eggs from northern Belize. *Archives of Environmental Contamination and Toxicology*, 42:319-324.

Peer Reviewed Publications cont.

PN Smith, GP Cobb, FM Harper, BM Adair, and ST McMurry. 2002. Comparison of White-footed Mice and Rice Rats as Biomonitors of Polychlorinated Biphenyl and Metal Contamination. *Environmental Pollution,* 119:261-268.

KD Reynolds, TR Rainwater, EJ Scollon, SM Sathe, BM Adair, KR Dixon, GP Cobb, ST McMurry. 2001. Accumulation of DDT and mercury in diets and selected tissues of Prothonotary Warblers (Protonotaria citrea) as related to foraging dynamics on a spatially heterogeneous contaminated site in Alabama. *Environmental Toxicology and Chemistry*, 20:2903-2909.

BM Adair and GP Cobb. 1999. Improved Preparation of Small Biological Samples for Mercury Analysis using Cold Vapor Atomic Absorption Spectroscopy. *Chemosphere*, 38:2951-2958.

Reviews and Proceedings

B. Adair, J.J. Bang, Y.B. Anderson, S.F. DeLauder, M. Bradshaw, M. Lamberth, F. Meheux, R. Malhotra, R. Fortmann, P. Egeghy, R. Williams, D. Whitaker. 2009. Water Quality Analysis in an Environmental Justice Community in Durham, North Carolina. *IN* Proceedings of the 2007 National Conference on Environmental Science and Technology. Godfrey Uzochukwu, Keith Schimmel, Shoou-Yuh Chang, Vinayak Kabadi, Stephanie Luster-Teasley, Gudigopuram Reddy, Emmanuel Nzewi (eds). Springer, 600pp.

BM Adair, SB Waters, V Devesa, Z Drobna, M Styblo, DJ Thomas. 2005. Commonalities in metabolism of arsenicals. *Environmental Chemistry.* 2: 161-166.

BM Adair, TJ McBride, MJ Hooper, and GP Cobb. 2002. Trophic Transport of Metals in Birds: Birds as Indicators of Exposure and Effect. *IN* Chemicals in the Environment: Fate, Impacts, and Remediation. Vol. 806, ACS Symposium Series. Robert L. Lipnick, Robert P. Mason, Margaret L. Phillips, and Charles U. Pittman, Jr. 480pp.

Publications in Preparation

BM Adair, V Devesa, M Styblo, D Thomas. Solid Phase Extraction Using Thionalide-Silica Gel for Accurate Quantitation of Methylation and Oxidation States of Arsenic Metabolites in Human Urine.

Technical Reports

BM Adair and WC Davis. 2009. Microwave extraction of arsenic species in fish and rice SRMs. Report of Analysis (ROA 839.01-09-214). Submitted to Stephen A. Wise, Chief Analytical Chemistry Division. 15pp.

MJ Hooper, GP Cobb, ST McMurry, KD Reynolds, BM Adair, TJ McBride, CA McFarland. 2001. Wildlife Biomonitoring at the Anaconda Smelter Site Deer Lodge County, MT: Draft Final Report. Submitted to USFWS of USGS, Helena, MT. May. 255 pp.

MJ Hooper, GP Cobb, ST McMurry, KD Reynolds, BM Adair, TJ McBride, CA McFarland. 2001. Wildlife Biomonitoring at the Anaconda Smelter Site Deer Lodge County, MT: Year 2000 Field Season Preliminary Report and Update. Submitted to USFWS of USGS Helena, MT. 64 pp.

MJ Hooper, GP Cobb, ST McMurry, KD Reynolds, BM Adair, M Schwarz, TJ McBride, CA McFarland, CM Bens 2000. Wildlife Biomonitoring at the Anaconda Smelter Site Deer Lodge County, MT: 1999 Annual Interim Report. Submitted to USFWS of USGS, Helena, MT. 139pp.

Invited Scientific Presentations

BM Adair *Elemental Analysis: It's not Elementary*. Citadel Sigma Xi, Brownbag lunch. February 8, 2013.

BM Adair *Fun with Metals and Proteins*. 2009. Hollings Marine Laboratory Symposium. 11 June, Charleston, SC.

BM Adair and MF Hughes. *Identification and Quantification of Arsenic Metabolites in Exposure, Metabolism and Health Effects Studies.* 2009. 3rd Asian Pacific Regional Meeting of the International Society for Xenobiotics: Understanding Xenobiotics for better drug development and therapy. May 10-12. Bangkok, Thailand. (platform)

BM Adair. *Mercury in an insectivorous bird species.* 2006. 8th International Conference on Mercury as a Global Pollutant. 6-11 August. Madison, Wisconsin. (poster)

BM Adair. *Trophic Transport and Effects of Metals in Birds Inhabiting Superfund Sites.* 2001 SBRP Annual Conference: "Assessing Risks of Hormonally Active Agents". Dec. 10-12. Gainesville, FL. (platform)

KD Reynolds, BM Adair, ST McMurry, GP Cobb, D Neuman, S Jennings, DJ Hoff, W Olsen, MJ Hooper. 1999. *Heavy Metal and Arsenic Residues in Small Mammals Inhabiting Differentially Remediated Test Plots at the Anaconda Smelter Site, Deer Lodge County, Montana.* Wildlife Applications to Remediation Decision-Making. 17-19 August. Denver, CO. (platform)

KT Rummel, BM Adair, GP Cobb, and MJ Hooper. 1997. *Chelator and porphyrin techniques in mercury contaminant assessment*. Society of Environmental Toxicology and Chemistry. 18th Annual Meeting. 17-21 November. San Francisco, CA. (platform)

Student Scientific Presentations

P. Intravichit* and B. M. Adair. 2017. "Analysis of heavy metals in livers and fillets of Spotted Seatrout (*Cynoscion nebulosus*)" 253st American Chemical Society National Meeting and Exposition, April 2-6, San Francisco, CA. *student presenter

B. T. Molnar*, B.M. Adair. 2016. "Analysis of arsenic, cadmium, copper, nickel, and mercury concentrations in liver, gills, and muscle of spotted seatrout (*Cynoscion nebulosus*) from the Ashley River in Charleston, South Carolina, Instrument Analysis" 251st American Chemical Society National Meeting and Exposition, March 13-17, San Diego, CA. *student presenter

M. Mirano*, B.M. Adair. 2015. "Cd, Ni, Zn and Cu concentrations in fish muscles collected from sites along the Ashley River" 249th American Chemical Society National Meeting and Exposition, March 22-26, Denver CO. *student presenter

S. Harbison*, B.M. Adair. 2014. "Arsenic speciation and separation using a solid support (Al_2O_3) batch method: A methods development" 247th American Chemical Society National Meeting and Exposition. March 16-18, Dallas, TX. *student presenter

J. Neeper*, F. Shriner, R. Hemingway, B. Adair. "Quantification of urea in a controlled-release fertilizer" (final paper number: 257). 2013. 245th American Chemical Society National Meeting and Exposition, April 7-11, New Orleans, LA. *student presenter

Scientific Presentations

BM Adair, Eric Kilpatrick, Guillaume Ballihaut, W Clay Davis, Walter Knight, Stephen Long, and Steven Christopher. 2009. *Immunoaffinity Sample Preparation with Detection of Proteins using Lanthanide Tags and ICP-MS*. International Symposium on Metallomics 7-10 June, Cininnati, Ohio. (platform)

BM Adair, Eric Kilpatrick, Guillaume Ballihaut, Clay Davis, Greg Turk, Stephen Wise, Stephen Long, and Steven Christopher. 2009. *Protein Quantification with Elemental Tags using ICP-MS.* 16th Annual Sigma Xi Post-Doctoral Poster Presentation 11 February, NIST, Gaithersburg, MD.

BM Adair, JJ Bang,YB Anderson, SF DeLauder, M Bradshaw, M Lamberth, F Meheux, R Malhotra, R Fortmann, P Egeghy, R Williams, D Whitaker. 2007. *Water Quality Analysis in an Environmental Justice Community in Durham, North Carolina.* 3rd National Conference on Environmental Science and Technology 12-14 September, Greensboro, NC (platform)

BM Adair, V Devesa, EE Hudgens, MT Schmitt, M Styblo, RL Calderon, DJ Thomas. 2006. *Collection and analysis of non-invasive biomarkers of As exposure in humans to simplify field studies of As toxicity*. American Chemical Society National Spring Meeting 25-30 March, Atlanta, GA. (platform)

W Xing, BM Adair, Z Drobna, M Styblo, DJ Thomas. 2006. *Catalytic differences between human wild type arsenic (+3 oxidation state) methyltransferase and its 287 polymorph.* Experimental Biology Annual Conference. 3-5 April. San Francisco, CA. (poster)

BM Adair, V Devesa, M Styblo, D.J Thomas. *Separation of Toxicologically Relevant Arsenicals in Urine Using a New Solid Phase Extraction Technique.* 2006. Society of Toxicology Annual Meeting. 5-9 March. San Diego CA. (poster)

BM Adair, EE Hudgens, MT Schmitt, RL Calderon, and DJ Thomas. 2005. *Examining biomarkers of exposure and preparation techniques for arsenic quantitation in biological studies*. Society of Toxicology Annual Meeting, 6-10 March, New Orleans, LA. (platform)

V Devesa, BM Adair, J Liu, MP Waalkes, BA Diwan, M Styblo, DJ Thomas. 2005. *Speciation of arsenic in the maternal and fetal mouse tissues following gestational exposure to arsenite*. Society of Toxicology Annual Meeting, 6-10 March, New Orleans, LA. (poster)

BM Adair, TJ McBride, CA McFarland, C Polydore, MJ Hooper, GP Cobb. 2002. *Modeling trophic transport and effects of metals in avian species.* Society of Environmental Toxicology and Chemistry, Europe. 12th Annual Meeting, 12-16 May. Vienna, Austria. (platform).

Scientific Presentations Cont.

BM Adair, TJ McBride, CA McFarland, C Polydore, MJ Hooper, GP Cobb. 2001. *Effects of Mixed Metal Exposure and Accumulation in Passerines Inhabiting the Anaconda Smelter Site in Montana.* Society of Environmental Toxicology and Chemistry. 22nd Annual Meeting, 11-15 November. Baltimore, MD (Poster).

BM Adair, TJ McBride, C Polydore, MJ Hooper, GP Cobb. 2001. *Mixed Metal Uptake and Accumulation in Passerines Inhabiting the Anaconda Smelter Site in Montana.* Society of Environmental Toxicology and Chemistry. 22nd Annual Meeting, 11-15 November. Baltimore, MD (Platform).

MS Schwarz, KD Reynolds, CA McFarland, TJ McBride, BM Adair, RE Strauss, MJ Hooper, GP Cobb, Bill Olsen, ST McMurry. 2001. *Deer Mouse and Meadow Vole Population Parameters and Heavy Metal Contamination at the Anaconda Smelter Superfund Site.* Society of Environmental Toxicology and Chemistry. 22nd Annual Meeting, 11-15 November. Baltimore, MD (Poster).

TJ McBride, BM Adair, CL Polydore, CA McFarland, CP Cobb, MJ Hooper. 2001. *Metal Exposure and Effects in American Kestrel Nestlings Raised on a Smelter-Impacted Superfund Site.* Society of Environmental Toxicology and Chemistry. 22nd Annual Meeting, 11-15 November. Baltimore, MD (Poster).

BM Adair, TJ McBride, MJ Hooper, and GP Cobb. 2000. *An Examination of Heavy Metal Exposure and Effects on Starlings Inhabiting a Superfund Site in Montana.* Regional Meeting of South Central Society of Environmental Toxicology and Chemistry, April. Denton, TX. (Platform)

BM Adair, TJ McBride, ST McMurry, MJ Hooper, D Hoff, B Olsen, and GP Cobb. 2000. *Trophic Transport of Heavy Metals in Starlings (Sturnus vulgaris) Inhabiting a Superfund Site in the Mountain West Region.* Symposium: Environmental Chemistry: Emphasis on EPA Research and EPA Sponsored Research. Annual Meeting of American Chemical Society, August. Washington, DC. (Platform)

BM Adair, TJ McBride, MJ Hooper, ST McMurry and GP Cobb. 2000. E*uropean Starlings as Indicators of Heavy Metal Exposure at the Anaconda Smelter Superfund Site.* Society of Environmental Toxicology and Chemistry. 21st Annual Meeting, 12-16 November. Nashville, TN. (Poster)

TJ McBride, BM Adair, CP Cobb, MJ Hooper. 2000. *Metal and Metalloid Residues, Porphyrin Profiles, and Reproductive Success in American Kestrels at the Anaconda Smelter Superfund Site, Montana.* Society of Environmental Toxicology and Chemistry. 21st Annual Meeting, 12-16 November. Nashville, TN. (Poster)

Scientific Presentations Cont.

KD Reynolds, MS Schwarz, CA McFarland, TJ McBride, BM Adair, GP Cobb, MJ Hooper, ST McMurry. 2000. *Metal and Metalloid Residues, Hematology, and Porphyrin Profiles in Small Mammals Inhabiting Remediated and Naturally Revegetated Plots at the Anaconda Smelter Superfund Site, Montana.* Society of Environmental Toxicology and Chemistry. 21st Annual Meeting, 12-16 November, 2000. Nashville, TN. (Poster)

MS Schwarz, KD Reynolds, CA McFarland, TJ McBride, BM Adair, GP Cobb, MJ Hooper, ST McMurry. 2000. *Deer Mouse and Meadow Vole Population Parameters and Heavy Metal Contamination at the Anaconda Smelter Superfund Site.* Society of Environmental Toxicology and Chemistry. 21st Annual Meeting, 12-16 November, 2000. Nashville, TN. (Poster)

BM Adair, KT Rummel, JS Woods, GP Cobb, and MJ Hooper. 1998. *Estimating Soft Tissue Mercury Concentrations and Speciation Using the DMPS Chelator Challenge*. Society of Environmental Toxicology and Chemistry. 19th Annual Meeting, 15-19 November. Charlotte, NC. (Poster)

KT Rummel, BM Adair, JS Woods, GP Cobb, and MJ Hooper. 1998. *Porphyrin Profile Alteration and DMPS Chelator Challenge Used in Conjunction as a Non-lethal Indicator of Heavy Metal Exposure.* Society of Environmental Toxicology and Chemistry. 19th Annual Meeting, 15-19 November. Charlotte, NC. (Poster)

BM Adair, E. Collins, ST McMurry, and GP Cobb. 1997. *Micro digestion Technique for Mercury Analysis of Small Biological Samples Applied to Environmental Site Assessment.* Regional Meeting of Carolinas Society of Environmental Toxicology and Chemistry, April. Clemson, SC. (Platform)

BM Adair, ST McMurry, S. Sathe, R Troup, B Collins, K Rummel, S Skipper, T Rainwater, E Scollon, GP Cobb. 1997. *Comparison of Spatial Distributions of Mercury in Biological Tissue and Soil from a Contaminated Flood Plain to Assess Uptake*. Society of Environmental Toxicology and Chemistry.18th Annual Meeting, 16-20 November. San-Francisco, CA. (Platform)

BM Adair and GP Cobb. 1996. *Mercury Analysis Using a Newly Developed Micro digestion Technique*. Regional Meeting of Carolinas Society of Environmental Toxicology and Chemistry, April. Lake Norman, NC. (Poster)

B M Adair, ST McMurry, GP Cobb. 1996. *A Micro digestion Technique for Mercury Analysis of Small Biological Samples Applied to Environmental Site Assessment.* Society of Environmental Toxicology and Chemistry. 17th Annual National Meeting, 17-21 November. Washington, DC. (Platform)

Conference Attendance: No Presentation

Southeastern Regional Meeting of the American Chemical Society
58th 1-4 November 2006. Augusta, Georgia
Society of Toxicology Annual National Meetings
42nd 9-12 March, 2003. Salt Lake City, Utah.
43rd 21-25 March, 2004. Baltimore, Maryland.
Society of Environmental Toxicology and Chemistry Annual National Meetings.
25th Annual and 4th World Congress 14-18 November, 2004. Portland, Oregan.
26th 13-17 November, 2005. Baltimore, Maryland.

Skills, Techniques, Instrumentation

Software
Microsoft Office-Word, Excel, PowerPoint, ACCESS; Sigma Plot, Correl-Quattro Pro and Word Perfect, Lotus 123, Origin Lab, Star LC workstation, AA Winlab, SAS, Matlab, JMP, PlasmaLab, Xcalibur multiple versions,

Instruments
Manufacturers-Varian, Perkin Elmer, Agilent, HP, PS Analytical, Leeman Labs, Thermo, Dionex

I develop methods, use, maintain, repair, and troubleshoot mechanical, hardware, and software issues. I write protocols and QA/QC procedures and train others to use:
HPLC-AFS, HPLC-HG-AFS, HPLC-Scintillation, HPLC-UV, HPLC-Laser-AFS, GF-AAS, CV-AAS, HG- AAS, FIMS- AAS, FIAS-AAS, ICP-OES, ICP-MS, ESI-MS, MALDI-MS

Routine analysis GC-FID, GC-FPD, GC-ECD, GC-MS, HPLC-MS, HPLC-ICP-MS, cyclic voltammetry, proton NMR, IR

Preparation Methods
Metals quantification- Acid digestion: hotplate, microwave, and water bath; basic digestion.
Metals and Organics quantification- Extraction: solid phase, ASE, GPC, liquid-liquid
Protein isolation- SDS-PAGE, Native PAGE, batch and column affinity purification, ultra-centrifugation for size separation and buffer transfer, size exclusion chromatography, anion exchange chromatography

Awards and Honors

Certificate of Appreciation The Citadel, NROTC
For appreciation of extra efforts to help Naval ROTC students. Awarded based on nomination by student for help with senior research. (Certificate, medal) 2015

C.A. Medbery Research Mentor Award The Citadel, School of Science and Mathematics
For dedication to teaching research fundamentals. Awarded based on efforts during summer research (Certificate, $500.00) 2013

Level III Scientific and Technological Achievement Award US EPA
For contributions to research in determining the disposition of pentavalent and trivalent methylated arsenicals in a rodent model. Awarded based on scientific advisory board recommendation from two publications. Certificate (1st authors $). 2009

"S" Award-special accomplishment recognition "T" award US EPA
On the As analytical team, I developed methodology for toenail analysis as a biomarker. The team developed methods to detect arsenic and its metabolites in a variety of matrices which led to several publications and has significantly advanced the field of arsenic toxicology and risk assessment. The value of benefit is determined to be high and the extent of application is broad." $650.00 2006

"S" Award-special accomplishment recognition award US EPA
"Developed a methodology for speciation of arsenicals from biological samples. Two papers were published and a manuscript has been completed. The value of benefit is determined to be high and the extent of application is broad." $750.00 2005

"S" Award-special accomplishment recognition award US EPA
8/25/03 $500.00 and 12/04/03 $300.00 Contributions to moving laboratory and setting up three new labs. 2003

Fourth SBRP Karen Wetterhahn Memorial Winner NIEHS/EPA
Superfund Basic Research Program. For metals research and work in departmental and minority student groups. Award: free trip to SETAC Vienna, 2002 and NIEHS facilities to present research. Award presentation at SBRP Annual Conference in 2001. 2001

SETAC Student Travel Award to 22nd Annual Meeting Baltimore, MD 2001

Graduate Student Award: Environmental Chemistry Environmental Chemistry division of ACS, based on recommendations and research. Award: one year division membership and ES&T subscription. 1997

Outstanding M.S. Candidate in Environmental Toxicology Dept. Environ. Toxicology, Clemson University. Voted on by department faculty. Award: travel to national conference and plaque. 1997

Awards and Honors cont.

Student platform presentation awards: based on presentation content, delivery, and depth of knowledge

1st place: Regional Meeting of South Central SETAC, Denton, TX. Award: travel to 21st Annual National SETAC Meeting, 12-16 November, 2000. Nashville, TN 2000

1st place: Regional Meeting of Carolinas SETAC, Clemson, SC. Award travel to 18th Annual National SETAC Meeting, 16-20 November, 1997. San-Francisco, CA 1997

2nd place: 17th Annual SETAC National Meeting , 17-21 November, Washington, DC. Award $150.00. 1996

SETAC Student Travel Award to 17th Annual Meeting. Washington, DC 1996

Funded Grants

Faculty Research Grant from The Citadel Foundation, 2017-2018 $3000.00
Metal accumulation in fish in rivers in Charleston

Faculty Research Grant from The Citadel Foundation, 2016-2017 $3000.00
Influence of a major flood event on metal accumulation in fish from the Ashley River, Charleston, SC.

Development/Presentation Grant from the Citadel Foundation, 2015 $1809.00
Wrote the grant with the goals of supporting and helping students get the most out of the conference, presenting of our research results, and attending sessions to get ideas and learn how to implement and assess assignments in the chemistry curriculum, especially instrumental analysis.

Special Funds: Dean of School of Science and Mathematics, summer 2014. $7000.00
Funds (with overhead subtracted) to pay salaries for myself and a visiting student researcher to design and implement a water quality study.

Faculty Research Grant from The Citadel Foundation, 2014-2015 $2250.00
Water Quality and Metals survey on the Ashley River. I requested $3000.00 and received the reduced rate of funding that all faculty received.

Faculty Research Grant from The Citadel Foundation, 2013-2014 $3000.00
Examination of arsenic interactions with urinary components: the impact on speciation analysis.

Development Grant from the Citadel Foundation, 2012 $1690.00
I wrote and received funding to attend the Council on Undergraduate Research (CUR) Conference: "Leveraging Uncertainty: Toward a New Generation of Undergraduate Research" at The College of New Jersey on June 23-26, 2012.

Funded Grants, cont.

Faculty Research Grant from The Citadel Foundation, 2012-2013 $2990.00
A New sample collection method to conserve Arsenic III and V oxidation states for accurate speciation and quantification of Arsenic in biological samples.

New Faculty Research Grant from the Citadel Foundation, 2011-2012 $2950.00
Installation and optimization of a new ICP-OES

Travel Grant from the Citadel Foundation, 2013 $1235.72
"Quantification of urea in a controlled-release fertilizer" (final paper number: 257). J. Neeper*, F. Shriner, R. Hemingway, B. Adair. *student presenter. Requested: $1872.31
To present: 245th American Chemical Society National Meeting and Exposition, April 7-11, 2013.

Submitted Grants

Major Research Instrumentation Program, National Science Foundation, 2016. $606,236.00
"MRI: Acquisition of an Interchangeable Liquid/Gas Chromatograph-Mass Spectrometer for Undergraduate Research and Training in Chemistry and Biology." R. A. Hunter and B. M. Adair. Collaborated in 2015 with Dr. Hunter to prepare the grant materials and agreed to provide instrumental use, maintenance, and coordination if the instrument was purchased. Good reviews but without laboratory manager or other support of the University the funders will not fund.

Professional Organizations

American Chemical Society (ACS) (current)	20 years
Environmental Section ACS (current)	17 years
Analytical Section ACS (current)	6 years
NC Regional ACS	2 years
Society of Toxicology and Environmental Chemistry (SETAC)	6 years
NC Regional SETAC	2 years
West Texas Regional SETAC	2 years
SC Regional ACS (current)	5 years

Service and Outreach

Citadel

Moderator, Chemistry and Divinity Session **March 17, 2017**
Met with two students three different times to prepare and practice presentations. Then introduced and guided students through the discussions after the presentation.

Charleston STEM Festival **February 2015, 2017**
I designed chemistry demonstrations, and helped cadets before and after to present them to children at the festival.

Academic Advisor: **August 2012-present**
I schedule meetings with advisees at least twice a semester to check on progress and help with scheduling issues. I have also met with students to discuss concerns that they may have. (20 students)

CURE Workshop **November 21-22 2013**
Performed preliminary planning with department faculty and then participated in a day long workshop to design and implement research into the undergraduate curriculum of the Chemistry program.

Assessment Luncheon April 2013
Attended a working luncheon to evaluate the assessment process for the core curriculum.

Leadership Day: 2012
Organized and planned (with Ron Hemingway) ½ day science experience for elementary students and trained Cadets that were Chemistry Majors to help the young learners to perform the experiments.

Participated in Science Night at The Citadel- 2011, 2012
Students and parents from title1 schools in Charleston County come to explore STEM topics with professionals and students. I developed a hands-on experiment applicable to children from k-12 to demonstrate chromatography and reactivity. And I developed a separate demonstration that demonstrates concentration, reactions, and reaction rates.

Student Instructors Science night at the Citadel I trained cadets the use the aforementioned hands-on experiments with children.

Chemistry Representative on Search Committee: **Simulation Laboratory Manager/Instructor, Nursing - Job Number: 494184.** **2016-2017**

Helped determine the questions asked of candidates, read applications and decide who to interview.

Service and Outreach, cont.

Citadel

College or Schoolwide Committees

Curriculum and Instruction Committee	2012-2015
Facilities and Services Committee	2016-present
SSM, Research and Development Grants Committee	2015-present

Chemistry Department Committees

Curriculum	2012-2016, Chair 2015/16
Assessment	2015-present, Chair 2016/17
Facilities	2013-2015
Recruitment	2015-present

Profession

Peer Reviewer	**Date (post Citadel)**
Dose Response	2015
Food Analytical Methods	2014
Archives of Environmental Contamination and Toxicology	
Environmental Research	
Environmental Toxicology and Chemistry	2012
Journal of Toxicology and Environmental Health	
Toxicology and Applied Pharmacology	
Science of the Total Environment	

Judge: First-time Presenters in Environmental Chemistry. 2013
245th American Chemical Society, April 7-11, New Orleans, LA. Assessed the quality and merit of material along with presentation style and format as they relate to Environmental Chemistry.

Protein Research at Hollings Marine Lab group In an effort to make collaborative research easier for new employees, I met with researchers performing research with proteins and compiled a list of all protein related equipment, uses, and restrictions to increase efficiency and collaboration at the facility. The group met to discuss the possibility of developing a core research facility or plan for protein research at HML. 2009

Planning Committee for Hollings Marine Lab Symposium Facilitated set up, breakdown, and logistics of poster sessions, breaks, lunch, and transitions. 2009

Seminar Speaker "What a long strange trip it's been: a unique journey to a life in science" Chemistry Departmental Seminar, College of Charleston, Charleston, SC. 2008

Judge: Grad. Student Posters SBRP Annual Meeting, December 2-5, Durham, NC 2007

Service and Outreach, cont.

Profession

Volunteer, ACS Chemistry Demonstration NC State Fair. Helped hand out information to promote chemistry and assisted with hands on scientific presentations. Oct, 2005

Women in Science and Engineering EPA/RTP Chapter 2003-2006
Chair (2005) and **Committee Member (2003-2006)** We plan and coordinate training and networking events to improve conditions and increase awareness of issues for women at EPA.

Science Go Round, Volunteer. I developed and presented an interactive presentation of basic chemistry concepts including chromatography, solutions, concentration, and reactions for 2nd and 5th graders, Morrisville Elementary School, Morrisville, NC 2005

Shaw University Program Speaker I developed and presented interactive lectures on environmental chemistry with minority high school students interested in math and science. 2003

Science Fair Judge:

NC State Science Fair, Raleigh, NC for Jr high- Environmental Science	2005
Green Junior High School, Durham, NC- Earth Science	2003
Ralls Junior High School, Ralls, TX-General Science	2001
West Texas Regional Science Fair for Junior High, Lubbock, TX-6th grade	1998

Texas Tech University, Lubbock, TX

Graduate Student Representative, ADA Compliance Committee Invited by members to help assess university compliance with the Americans with Disabilities Act 1998-1999

President (1999), Vice President (1998) TIEHH Student Group Elected by members. Liaison between students, faculty, and science advisory board to address student concerns.

Founding Member and Treasurer (1998), Texas Tech Chapter Delta Sigma Omicron Student support group and organization to increase disability awareness. We planned and participated in awareness programs and brought in motivational speakers. 1997-2001

Vice President Dept. group. Clemson University, Clemson, SC. Elected by members to help president and act as student representative to the institute scientific advisory board. 1996

Service and Outreach, cont.

Community

Our Coastal Future Forum (stipend) Oct. 20-21, 2017
I participated with discussions with concerned citizens about the health of coastal ecosystems. The results of the discussions will be shared with policy-makers and participants to improve communication of scientific results. So, community members can better communicate with policy-makers who can make better informed decisions
.

PCB concerns 2016
I provided contact information and interpretation of data to a concerned citizen who was trying to determine the risk of PCB exposure if she purchased an art studio near a former Superfund site in Bloomington, IN.

Charleston Area Justice Ministry (CAJM), Founding Member 2012-present
Steering Committee Member: Examination of bias in police practices 2015-present
An ecumenical organization of congregations of different faiths, socioeconomic, and political backgrounds uniting to research, identify, and rectify injustice in the Charleston Area. Members determine best practices and work with appropriate public officials to assist them in the implementation of the their duties.

Board Member HOA As board member, I keep track of current events that effect the neighborhood, plan meetings, and distribute information to neighbors. I have represented the neighborhood at several community meetings. 2010-2012

Help with Presbyterian Student Association (College of Charleston): Regularly attend weekly meetings and help lead student small group discussion of religious topics. 2011/2012

Habitat for humanity: 2009, 2013, 2016
I help put up walls and paint a habitat house sponsored by First Scots Presbyterian Church.

Planner, Young Women's Retreat. Helped plan, reserve space, and coordinate events for a day long retreat for women of First (Scots) Presbyterian Church. 2011

President of Northshore Neighborhood Association Primary contact for neighbors to address concerns and act as representative to city council for neighborhood issues. 2006

Training/ Continuing Education

Webinars

Alternative Careers in Chemistry, ACS April 2017, June 2017

South Carolina SeaGrant, training Spring 2017

Citlearn: New version training August, 2013
Learned how to adjust grading scale, add video links, and match Citlearn calander with outlook calendar

Agilent: May, 2012
"ICP-OES analysis of difficult matrixes and basic instrument upkeep and maintenance.

Communicating with Your Colleagues Webinar through ACS Fall 2011
Darkness to Light Training Citadel-wide training to increase awareness of child abuse.
Oct 25, 2012, 1:00PM - 3:30PM
Sept. 29, 2015, re-certification

Workshops and Courses

Safety in the Laboratory, Laboratory Safety Institute May 6, 2016
0.7 continuing education credits, full day safety workshop.

COAch
CUR Conference: "Leveraging Uncertainty: Toward a New Generation of Undergraduate Research" at The College of New Jersey June 23-26, 2012

Tutorial in Protein Purification hands-on workshop
CREBB, Rutgers University, New Brunswick, NJ Feb 29-Mar 2, 2008

Workshop on Arsenic Research and Risk Assessment
Shepherdstown, WV May 31-June 2, 2006

NIEHS/NTA Career Fair, 8th Annual Sigma Xi Center, RTP, NC April 29, 2005

US EPA Special Emphasis/Diversity Program Managers National Training Conference
Miami Beach FL July 26-28, 2005

Varian Equipment Orientation: US EPA, RTP, NC March, 2005

Federal Women's Program Training Nashville, TN July, 2005

PS Analytical Short Course, 2004 Winter Conference on Plasma Spectrometry
Fort Lauderdale, FL January 4, 2004

Training/ Continuing Education Cont.

Workshops and Courses cont.

Computational Biology, Dose and Response (4hrs) continuing education course PM11, 43rd Annual SOT meeting. Baltimore, MD March 21, 2004

Laser Safety Training July 6, 2004

Team Building and Coaching Seminar (6.5 hrs) Walt Patterson, leader
US EPA, RTP, NC August 9, 2004

Basic Radiation Worker Training (6 hrs) US EPA, RTP, NC February 20th and June 5, 2003

NIEHS/NTA Biomedical Science and Career Fair, 6th Annual
NIEHS, RTP, NC April 25, 2003

The Human Connection: Meyers-Briggs personality identification and training. (4 hrs)
Wendy B. White, leader. US EPA, RTP, NC August 28, 2003

US EPA HAZWOPER Certification refresher (8 hr) June 23, 2000

US EPA Hazardous Materials Incident Response Operations (165.5)
(3.8 Coninuing Ed units) December 14-18, 1998