

VANESSA A. FITSANAKIS, PhD, ATS Fellow
Toxicologist/Neuroscientist

PROFESSIONAL EXPERIENCE

- 2019 to present **Robson Forensic, Inc.**
Associate
Provide scientific and technical investigations, analysis, reports, and testimony toward the resolution of cases involving exposures to drugs, chemicals, toxicants, and environmental agents as well as their effects on human health and performance.
- 2017 to 2019 **Northeast Ohio Medical University, Department of Pharmaceutical Sciences**
Associate Professor and Vice-Chair
- 2018 to 2019 **Kent State University**
Graduate Faculty Status
- 2005 to 2017 **King University, Department of Biology**
Endowed Chair 2014-2017
Associate Professor 2012-2017
- 2004 to 2006 **Vanderbilt University Medical Center, Department of Pediatrics**
Research Instructor
- 2003 to 2004 **Wake Forest University Medical School, Department of Physiology and Pharmacology**
Postdoctoral Research Fellow (Laboratory of Michael Aschner, Ph.D.)
- 2003 **Winston-Salem State University, Department of Life Sciences**
Instructor
- 1997 to 1998 **Vanderbilt University**
Graduate Rotation (Laboratory of Ariel Deutch, Ph.D.) 1998
Graduate Rotation (Laboratory of Giesla Mosig, Ph.D.) 1997
Graduate Rotation (Laboratory of Doyle G. Graham, MD, Ph.D.) 1997
- 1995 to 1996 **East TN State University, Department of Biochemistry**
Undergraduate Research (Laboratory of David Johnson, Ph.D.)
- 1994 **Medical College of Virginia at Virginia Commonwealth University, Department Biochemistry**
Undergraduate Research Internship (Laboratory of Verne Schirch)

PROFESSIONAL CREDENTIALS

Fellow, Academy of Toxicological Sciences (ATS)

VANESSA A. FITSANAKIS, PhD, ATS Fellow
Toxicologist/Neuroscientist

EDUCATION

Ph.D., Cellular and Molecular Neuroscience, Vanderbilt University, Nashville, TN Laboratories of Doyle G. Graham, MD, Ph.D., and Thomas J. Montine, M.D., 2003

M.Sc., Sociology of Science and Technology, the University of Edinburgh, United Kingdom, Professor David Bloor, Thesis Advisor, 1997

B.S., (*Cum Laude*) Chemistry, Milligan College, Johnson City, TN David Johnson, Senior Thesis Advisor, 1996

HONORS AND AWARDS

Outstanding reviewer Neurotoxicology Elsevier Publishing Group	2017
Outstanding reviewer Environmental Toxicology and Pharmacology Elsevier Publishing Group	2017
Nominee, by peers in the Society of Toxicology for the "Undergraduate Educator Award"	2016-2017
Nominee, by peers in the Society of Toxicology for the "Undergraduate Educator Award"	2015-2016
Nominee, King University candidate for "USA Teacher of the Year"	2015-2016
Faculty Lecturer, selected by the King University Student Body King University Bristol, TN	2013-2014
Nominee, King University candidate for "TN Science Teacher of the Year" King University Bristol, TN	2011
Outstanding Professor Award King University Student Athlete Advisory Committee Bristol, TN	2010-2011
Top Reviewer Neurotoxicology and Teratology Elsevier Publishing Group	2010
Faculty Lecturer, selected by the King University Student Body King University Bristol, TN	2008-2009

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Institutional Training Grant Funding National Institute of Environmental Health Sciences Center for Molecular Toxicology Vanderbilt University Nashville, TN	2001-2002
Graduate Student Fellowship National Finalist Society of Toxicology Philadelphia, PA	2000
Institutional Training Grant Funding National Institutes of Health Center for Cellular and Molecular Neuroscience Vanderbilt University Nashville, TN	1998-2000
Rotary International Ambassadorial Scholarship District 7570, Bristol, Virginia-TN Club Rotary International	1996-1997
Outstanding Chemistry Student, awarded by the American Chemical Society Milligan College Johnson City, TN	1996
Outstanding Presentation Award (First Place), Undergraduate Research Forum East TN State University Johnson City, TN	1996
Professional Memberships and Activities <i>Society of Toxicology</i>	
Full Member, Society of Toxicology	2015-present
Associate Member, Society of Toxicology	2005-2015
Vice-President of the Allegheny-Erie Society of Toxicology Regional Chapter	2019-2020
Member, Undergraduate Recruitment and Education Committee	2019-2020
Member, Toshio Narahashi Travel Awards Committee for the Neurotoxicology Specialty Section	2018-2019
Member, Undergraduate Education Subcommittee	2017-2019
Councilor, Neurotoxicology Specialty Section, Society of Toxicology	2017-2019
Co-Chair, Seeking Funding for Undergraduate Research, Society of Toxicology	2010
Councilor, Neurotoxicology Specialty Section, Society of Toxicology	2009-2011
Member, Undergraduate Education Summit, Society of Toxicology	2007-2008
Chair, K-12 Education Committee, Society of Toxicology	2007-2008

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Member, K-12 Subcommittee, Society of Toxicology	2005-2008
Chair, K-12 Scientific Education Information Exhibition, Society of Toxicology	2005-2007
Student/Postdoctoral Member, Society of Toxicology	2000-2004
Member, Neurotoxicology Specialty Section, Society of Toxicology	2000-present

Other Professional Societies

Member, Behavioral Toxicology Society	2005-2007
Member, International Society for the Study of Xenobiotics	1999-2004

Post-Doctoral and Graduate Societies

Member, Postdoctoral Fellows Association, Wake Forest University Health Sciences	2004
Member, Neuroscience Student Organization, Vanderbilt University	1998-2002

Editorial Board Appointments and Peer Reviewing

Member, Editorial Board, <i>Neurotoxicology</i> , Elsevier Publishing Company New York, NY	2017-present
Ad Hoc Reviewer, <i>Environmental Toxicology and Pharmacology</i> Elsevier Publishing Company New York, NY	2015-present
Ad Hoc Reviewer, <i>Free Radical Research</i> , Informa Healthcare London, United Kingdom	2010-2014
Member, Board of Directors, Editorial Board, <i>Toxipedia</i>	2008-2016
Ad Hoc Reviewer, <i>Toxicological Sciences</i> , Oxford University Press New York, NY	2006-present
Ad Hoc Reviewer, <i>Neurotoxicology and Teratology</i> , Elsevier Publishing Company New York, NY	2006-present
Ad Hoc Reviewer, <i>Human and Experimental Toxicology</i> Hodder Arnold, Bedfordshire, United Kingdom	2005-present
Ad Hoc Reviewer, <i>Brain Research</i> , Elsevier Publishing Company New York, NY	2003-present
Ad Hoc Reviewer, <i>Neurotoxicology</i> , Elsevier Publishing Company New York, NY	2003-2017

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Committee Assignments and Administrative Services

Administrative Course Director for the Foundational Sciences College of Pharmacy Northeast Ohio Medical University Rootstown, OH	2019
Member, Leibelt-Wheeler Faculty Excellence Committee Northeast Ohio Medical University Rootstown, OH	2019
Member, Neuroscience Admissions Committee Kent State University Biomedical Studies Graduate Program Kent, OH	2019
Vice-Chair, Curriculum Committee Northeast Ohio Medical University Rootstown, OH	2018-2019
Member, College of Pharmacy Strategic Planning Task Force Northeast Ohio Medical University Rootstown, OH	2017-2019
Member, College of Pharmacy Curriculum 2.0 Committee Northeast Ohio Medical University Rootstown, OH	2017-2019
Member, Curriculum Committee Northeast Ohio Medical University Rootstown, OH	2017-2019
Member, University Faculty Council Northeast Ohio Medical University Rootstown, OH	2017-2019
Member, Pharmaceutical Sciences Curricular Revision Workgroup Northeast Ohio Medical University Rootstown, OH	2017
Chair, Biology Curriculum Revision Committee King University Bristol, TN	2015
Chair, Human Subjects Research & Review Committee King University Bristol, TN	2013-2016
Chair, Research Council King University Bristol, TN	2013-2014

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Member, Health Sciences Committee King University Bristol, TN	2008-2013
Member, Athletic Committee King University Bristol, TN	2008-2010
Member, Ad Hoc Core Curriculum Committee King University Bristol, TN	2008-2009
Member, Academic Council King University Bristol, TN	2008-2009
Professional Development	
Attendee, Improving Your Negotiation Skills to Close the Salary Gap Women in Toxicology Sponsored Mentoring Event Baltimore, MD	2019
Attendee, So, You Want to be a Consultant... Career Resource and Development Committee of the Society of Toxicology Webinar	2019
Invited Reviewer, National Institute of Environmental Health Sciences K99-R00 Applications National Institutes of Health	2018
Attendee, Cellular and Molecular Mechanisms of Toxicity Gordon Research Conference Andover, NH	2017
Attendee, Innovations in Toxicology Education Undergraduate Education Subcommittee, Society of Toxicology New Orleans, LA	2016
Invited Reviewer, Special Emphasis Panel (SEP) NIH's PAR 14-202: Environmental Contributors to Autism Spectrum Disorders (R21s) National Institutes of Health	2015
Attendee, Undergraduate Biology Educational Research Gordon Research Conference Lewiston, ME	2015
Attendee, Program Funding and Grants Administration National Institutes of Health Baltimore, MD	2015

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Attendee, Human Research Protections Workshop National Institutes of Health Baltimore, MD	2015
Invited Reviewer National Institute of Environmental Health Sciences Grant Review Panel	2014
Attendee, Computational and Experimental Aspects of microRNAs in Toxicology Drug Discovery Toxicology Specialty Section, Mechanisms Specialty Section, and the Molecular Biology Specialty Section, Society of Toxicology Phoenix, AZ	2014
Attendee, Cellular & Molecular Mechanisms of Toxicity Gordon Research Conference Andover, NH	2013
Attendee, Aging, Metabolism, Stress, Pathogenesis, and Small RNAs in <i>C. elegans</i> University of Wisconsin-Madison Madison, WI	
Attendee, Mitochondria: Energy, Signals and Homeostasis The American Society for Biochemistry and Molecular Biology Lansing, MI	2012
Attendee, Program Funding and Grants Administration National Institutes of Health Washington, DC	2012
Attendee, Continuing Education Course: Predictive Power of Novel Technologies (Cells to 'Omics): Promises, Pitfalls, and Potential Applications Molecular Biology Specialty Section of the Society of Toxicology Salt Lake City, UT	2010
Attendee, Silencing Genomes The Dolan DNA Learning Center and Cold Spring Harbor Laboratory Greensboro, NC	2009
Attendee, Continuing Education Course: Free Radicals for Toxicologists: From the Basics to Inflammation and Disease Immunotoxicology, the Inhalation and Respiratory and the Occupational and Public Health Specialty Sections Society of Toxicology Baltimore, MD	2009
Attendee, Rubric Rally: Developing Effective Rubrics for Classroom Teaching Committee for Excellence in Teaching and Learning, King University Bristol, TN	2008
Attendee, Seven Habits of Highly Effective People King University Bristol, TN	2007

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Attendee, Appalachian College Community Economic Development Plan Conference The Appalachian College Association and University of North Carolina—Charlotte Charlotte, NC	2007
Attendee, Introduction to Adult Health Care The Association of Adult Health Care Providers Bristol, TN	2007
Attendee, Appalachian College Association Teaching and Learning Conference Appalachian College Association Berea, NC	2007
Attendee, National Science Foundation Day The National Science Foundation Oak Ridge Associated Universities, and Oak Ridge National Labs Oak Ridge, TN	2007
Attendee, Women in Medicine and Research Leadership Conference: Successful Strategies for Women in Academic Medicine University of Arkansas for Medical Sciences College of Medicine Little Rock, AR	2005
Attendee, Mentoring for Success: A Workshop for Future Faculty North Carolina Alliance to Create Opportunity through Education, and the National Science Foundation Alliances for Graduate Education and the Professoriate Program Raleigh, NC	2004
Attendee, Marketing Yourself as a Toxicologist Sponsored by the Student and Postdoctoral Association of the Society of Toxicology Baltimore, MD	2004
Educational Activities	
<i>Academic Teaching and Course Development</i>	
Course Consultant Principles of Drug Body Interactions/Pharmacodynamics and Pharmacokinetics Northeast Ohio Medical University Rootstown, OH	2019
Course Consultant Introduction to Pharmaceutical Sciences Northeast Ohio Medical University Rootstown, OH	2019
Course Director Human, Anatomy, Physiology & Pathophysiology II (HAPP 2), Department of Pharmaceutical Sciences Northeast Ohio Medical University Rootstown, OH	2019

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Course Director Human, Anatomy, Physiology & Pathophysiology I (HAPP 1), Department of Pharmaceutical Sciences Northeast Ohio Medical University Rootstown, OH	2018
Course Director and Primary Lecturer Advanced Toxicology, Department of Biology King University Bristol, TN	2017
Course Director and Primary Lecturer Advanced Target Organ Toxicology, Department of Biology King University Bristol, TN	2013
Course Director and Primary Lecturer Honors Seminar: Environmental Justice, Department of Biology King University Bristol, TN	2013
Course Director and Primary Lecturer Clinical Neuroanatomy, Department of Biology King University Bristol, TN	2012-2017
Course Director and Primary Lecturer First Year Experience (KING 1000) for STEM students Sniders Honors Program Department of Biology King University Bristol, TN	2012
Course Director and Primary Lecturer First Year Experience (KING 1000) for mixed majors section, Department of Biology King University Bristol, TN	2011
Course Director and Primary Lecturer Death in Italy: An Introduction to Toxicology for non-science majors, Department of Biology King University Bristol, TN	2011
Course Director and Primary Lecturer Advanced Topics in Neuroscience, Department of Biology King University Bristol, TN	2010-2012

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Course Director and Primary Lecturer Biochemistry, Department of Biology King University Bristol, TN	2009-2017
Course Director and Primary Lecturer Senior Thesis Research in Biology, Department of Biology King University Bristol, TN	2008-2016
Course Director and Primary Lecturer Interdepartmental Science Seminar, Department of Biology King University Bristol, TN	2007-2013
Course Director and Primary Lecturer Research Methods in Biology, Department of Biology King University Bristol, TN	2007-2015
Course Director and Primary Lecturer Neurophysiology, Department of Biology King University Bristol, TN	2007-2017
Course Director and Primary Lecturer Mammalian Toxicology, Department of Biology King University Bristol, TN	2006-2017
Course Director and Primary Lecturer Human Anatomy and Physiology I, Department of Biology King University Bristol, TN	2006-2013 2016-2017
Lecturer and Lab Coordinator Human Anatomy and Physiology, Department of Life Sciences Winston-Salem State University Winston-Salem, NC	2003
Instructor (Six Lectures) Fundamentals of Neuroscience, Cellular and Molecular Neuroscience Program Vanderbilt University Nashville, TN	2002
<i>Graduate Student Mentoring and Committee Member</i> Isha Mahtre Ph.D. student in the lab of Jason Richardson, Ph.D., Florida International University)	2018-present
Shelbie Burchfield (Ph.D. student in the lab of Jason Richardson, Ph.D., Florida International University)	2018-present

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Student Mentoring (Total of 43 Undergraduate Students)

Amanda Ignacz (BS in Cell and Molecular Biology, King University Class of 2019)	Summer 2018
Brian Larkin (BS Neuroscience, Oberlin College, Class of 2019)	
Kelly Rivenbark (BS in Biochemistry, King University Class of 2020)	
Samantha Cole (BS in Cell and Molecular Biology, King University Class of 2018)	2017-2018
Sonia Kennedy (BS in Cell and Molecular Biology, King University Class of 2018)	Academic Year
Demisha Porter (BS in Cell and Molecular Biology, King University Class of 2017)	2016-2017
Cody Rogers (BS in Cell and Molecular Biology, King University Class of 2017)	Academic Year
Kara Montgomery (BS Neuroscience, King University Class of 2016)	Summer 2016
Cameron Sale (BS General Biology, King University Class of 2016)	
Kara Montgomery (BS Neuroscience, King University Class of 2016)	2015-2016
Caleb Corona (BS General Biology, Class of 2016)	Academic Year
Cameron Sale (BS General Biology, King University Class of 2016)	
Kara Montgomery (BS Neuroscience, King University Class of 2016)	Summer 2015
Cameron Sale (BS General Biology, King University Class of 2016)	
Shelbie Burchfield (BS Cell and Molecular Biology, King University Class of 2015)	2014-2015
Brooke Widner (BS Cell and Molecular Biology, King University Class of 2015)	Academic Year
Royce Nichols (BS Neuroscience, King University Class of 2014)	
Andrew Bailey (BS Biology, Milligan College Class of 2017)	
Kara Montgomery (BS Neuroscience, King University Class of 2016)	
Andrew Bailey (BS Biology, Milligan College Class of 2017)	Summer 2014
Kara Montgomery (BS Neuroscience, King University Class of 2016)	
Ryan Nichols (BA Business, Economics, and Finance, King University Class of 2014)	
Sarah Orfield (BS in Neuroscience, King University Class of 2014)	2013-2014
Royce Nichols (BS in Neuroscience, King University Class of 2014)	Academic Year
Shelbie Burchfield (BS in Cell and Molecular Biology, King University Class of 2015)	
Rachel Donaldson (BS in Neuroscience, King University Class of 2014)	
Andrew Bailey (BS in Biology, Milligan College Class of 2017)	
Rebekah Frye (BS in Cell and Molecular Biology, King University Class of 2016)	
Shay Gray (BS in Neuroscience, King University Class of 2014)	
Caleb Corona (BS in General Biology, King University Class of 2016)	
Kara Montgomery (BS in Neuroscience, King University Class of 2016)	
Royce Nichols (BS in Neuroscience, King University Class of 2014)	Summer 2013
Shelbie Burchfield (BS in Cell and Molecular Biology, King University Class of 2015)	
Sarah Orfield (BS in Cell and Molecular Biology, King University Class of 2014)	
Kenneth McVey (BS in Neuroscience, King University Class of 2013)	2012-2013
Aireal Valezquez (BS in Forensic Chemistry, King University Class of 2012)	Academic Year
Eric Glenn (BS in Neuroscience, King University Class of 2012)	
Isaac Snapp (BS in Cell and Molecular Biology & BS in Mathematics, King University Class of 2013)	
Michele Donihe (BS in Cell and Molecular Biology, BA in Psychology, King University Class of 2013)	

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Kenneth McVey (BS in Neuroscience, King University Class of 2013)	Summer 2012
Karlyssa Smith (BS Neuroscience, King University Class of 2013)	
Isaac Snapp (BS in Cell and Molecular Biology, and BS Mathematics, King University Class of 2013)	
Joel Salva (BS in Physics and Mathematics, King University Class of 2011)	Summer 2011
Karlyssa Smith (BS Neuroscience, King University Class of 2013)	
Kenneth McVey (BS Neuroscience, King University Class of 2013)	
Callie Todt (BS in Cell and Molecular Biology, and BS in Chemistry, King University Class of 2013)	
Isaac Snapp (BS in Cell and Molecular Biology, & BS in Mathematics, King University Class of 2013)	
Megan Johnson (BS in Cell and Molecular Biology, King University Class of 2011)	2010-2011
Kenneth McVey (BS in Neuroscience, King University Class of 2013)	Academic Year
Morgan Machen (BS in Biology, King University Class of 2011)	Summer 2010
Joel Salva (BS in Physics and Mathematics, King University Class of 2012)	
Amanda Smith (BS in Neuroscience, King University Class of 2010)	2009-2010
S. Jayne Richardson (BS in Neuroscience, King University Class of 2010)	Academic Year
Oriol Mirallas (BS in Biochemistry, University Class of 2010)	
Brandon Paramore (BS in Cell and Molecular Biology, King University Class of 2010)	
Anthony Fields (BS in Cell and Molecular Biology, King University Class of 2010)	
Kaci Foster (RN, BSN, King University Class of 2010)	
Holly Hatfield (BS in Neuroscience, King University Class of 2009)	2008-2009
Ana Valente (BS in Cell and Molecular Biology, King University Class of 2009)	Academic Year
T. Jordan Smith (BS in Physics, King University Class of 2009)	
J. Andrew Stuart (BS Cell and Molecular Biology, King University Class of 2009)	
Rekek Negga (BS in Cell and Molecular Biology, King University Class of 2009)	
David Rudd (BS in Cell and Molecular Biology, King University Class of 2008)	2007-2008
Rekek Negga (BS in Cell and Molecular Biology, King University Class of 2009)	Academic Year
Nathan Davis (BS in Cell and Molecular Biology, King University Class of 2008)	

Grants and Contract Awards

Funded, but Declined by PI

Fitsanakis, PI

National Institutes of Health/National Institute of Environmental Health Sciences
R01 ES029994-01A1 (Declined to Request Funding) 2019-2024

Toxic Mechanisms of Mn/Zn-EBDC-Containing Fungicides

The long-term goal of this project is to determine the active component of the widely-used fungicide mancozeb, and how exposure to this compound leads to neurotoxicity in humans. The research will further our understanding about the toxicity of metal-containing compounds, how they are transported into cells, and what metabolic processes are adversely affected. In addition to assessing how a ketogenic diet may reduce the associated toxicity, this work will also provide insight into the mechanisms through which dietary modifications exert the beneficial effects.

Total direct costs: \$1,250,000 (Reviewed February 2019, Percentile: 7.0)

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Completed Funding

Fitsanakis, PI

National Institutes of Health/National Institute of Environmental Health Sciences
R15-ES027998

2017-2019

Gene-Environment Interactions in Neurodegenerative Disease

The long-term goal of this research is to determine if mutations in antioxidant or mitochondrial genes increase risk of neurotoxicity or neurodegeneration following exposure to fungicides containing Mn/Zn-ethylene-bis-dithiocarbamate (Mn/Zn-EBDC).

Total direct costs: \$300,000

Fitsanakis, PI

National Institutes of Health/National Institute of Environmental Health Sciences
2R15-ES015628-02A1 (Successfully Renewed)

2007-2015

Role of Oxidative Stress and Protein Transporters in Glyphosate and Mancozeb Neurotoxicity

The overarching goal of this research was to examine the contribution of two high-usage pesticides (Mancozeb and Touchdown) to neurotoxicity by assessing whether specific mitochondrial complexes were inhibited, and the nature of specific reactive oxygen species (ROS) produced. Additionally, the project was designed to determine whether these pesticides could enter neurons via neurotransmitter or metal transporters.

Total direct costs: \$450,000

Adkins (PI), Swartz (Co-PI), Fitsanakis (Co-PI)

Appalachian College of Pharmacy Pilot Project

2010-2011

No Number

Caffeine Intake and its Correlation with Self-Reported Depression and/or Depressive Symptoms College

The purpose of this study was to determine if the intake of caffeine is correlated to self-reported depression and/or depressive symptoms in college students.

Total direct costs: \$5,000

Powell (PI), Fitsanakis (Co-PI), Gilmer (Co-I)

Appalachian College Association

2007-2008

No Number

Nanotechnology Toxicology Pilot Project

The goal of the pilot project was to generate preliminary data to determine whether *C. elegans* could be used to assess nanotubule toxicity, and whether size of the nanotubules modulated toxicity.

Total direct costs: \$3,000

Fitsanakis (PI), Brown (Co-PI), Butterworth (Co-PI), Robinson (Co-PI), Slemm (Co-PI), Wilkinson (Co-PI)

Appalachian College Association

2007-2008

No Number

Collaborative Initiative to Integrate and Assess Nursing and Biology Curriculum

This goal of this proposal was to assess and align the current biology curriculum and the extent to which it meets the needs of students from the biology department and the nursing program at King University.

Total direct costs: \$3,500

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McGovern (PI), Teng (Co-PI), Fitsanakis (Co-PI) Appalachian College Association Regional Economic Planning and Development Grant No Number King University Economic Planning and Community Contributions This grant provided an opportunity to assess the regional strengths associated with small business growth and development, and to determine the current strengths and weaknesses. It also involved assessing how King University could facilitate regional economic development and job retention Total direct costs: \$100,000	2007-2010
Ashner (PI), Fitsanakis (Co-PI) United States Army and the Department of Defense W81XWH-0510239 (Part of the Manganese Health Research Project Funding) MRI assessment of Mn accumulation in the rat brain associated with Fe-deficiency and supplementation The goal of the proposal was to assess the temporal deposition of brain manganese using magnetic resonance imaging (MRI). It also examines the effect of iron-deficiency and iron-supplementation on the temporal deposition and distribution of brain manganese. Total direct costs: \$150,000	2005-2007
Fitsanakis (PI) National Institutes of Health/National Institute of Environmental Health Sciences No Number (Pilot Funding from The Vanderbilt Center for Molecular Toxicology) Use of MRS to assess Mn neurotoxicity The goal of this funding was to generate preliminary data to assess the working hypothesis that pallidal neurodegeneration following exposure to Mn results from mitochondrial dysfunction. Magnetic resonance spectroscopy (MRS) was used to determine (1) whether increased Mn levels led to reduced brain ATP levels and (2) whether these changes were specific to gamma-aminobutyric acid (GABA) and glutamate. Total direct costs: \$50,000	2005-2006
<i>Competitive Student-Awarded Funding (Undergraduate Students)</i>	
Amanda Ignacz Society of Toxicology Regional Chapter Communication and Collaboration Committee (RC4) Provided travel money to the 58 th annual Society of Toxicology meeting to present her poster entitled "Parkinson's disease-relevant gene mutations render <i>C. elegans</i> more vulnerable to mancozeb fungicide exposure and mitochondrial hyperpolarization". Total award: \$1,000	2019
Kenneth McVey and Isaac Snapp Appalachian College Association (ACA) Ledford Student Research Awards Summer funding to work on projects entitled "Pre-Natal Exposure to TouchDown™ May Lead to Impaired Neurodevelopment" (KM), and "In Utero Exposure to TouchDown™ May Promote Early Oxidative Stress" (IS). Students presented their work at the annual ACA meeting, and at annual the Society of Toxicology meeting. Total award: \$8,800	2012

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- Anthony Fields 2009-2010
Appalachian College Association (ACA) and National Science Foundation
Academic scholarship that included mentoring sessions for student and faculty sponsor (Fitsanakis) at the annual ACA meeting. Also included and money for presenting his work at the annual Society of Toxicology.
Total award: \$6,500
- Ana Valente and Reid Barnett 2009
Society of Toxicology Undergraduate Travel Award
Competitive travel awards to attend the annual Society of Toxicology meeting to present their research at the main conference sessions. The award included participation in seminars targeting undergraduates interested in pursuing graduate or medical degrees. Total travel award: \$4,500
- Amanda Justice 2009
Appalachian College Association (ACA) and National Science Foundation
Awarded a travel grant to present her research at the annual meeting of the Society of Toxicology.
Total travel award: \$500
- Lindsey Vencill and Amanda Justice 2008-2009
Appalachian College Association (ACA) and National Science Foundation
Competitive academic scholarships that also included mentoring sessions for students and faculty sponsor (Fitsanakis) at the annual ACA meeting. Also included money Amanda Justice to present her research at the annual Society of Toxicology meeting.
Total award: \$13,000
- Reid Barnett and Amanda Justice 2008
Appalachian College Association (ACA) Ledford Student Research Awards
Summer funding to work collaboratively on various aspects of a project entitled "Potential Neurodegenerative Effects of Widely-Used Pesticides". Students presented their work at the annual ACA meeting.
Total award: \$6,280
- T. Jordan Smith 2008
Appalachian College Association (ACA) Ledford Student Research Awards
Summer funding to work at the Vanderbilt University Institute of Imaging Sciences (VUIIS) with Dr. Todd Peterson on a project entitled "Using PET to Examine the Effect of Sub-Acute Manganese Exposure in Rats" (JTS). Research was presented at the annual ACA meeting, and the annual Society of Toxicology meeting.
Total award: \$4,200
- Nathan Davis, David Rudd, and Rekek Negga 2007
Appalachian College Association (ACA) Ledford Student Research Awards
Summer funding to work collaboratively on a project entitled "Determination of LC₅₀s of RoundUp and Manzate in the Nematode *C. elegans*". Students presented their work at the annual ACA meeting, and the annual meeting of the Society of Toxicology.
Total award: \$8,500

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- Alexia Melo 2007
Appalachian College Association (ACA) Ledford Student Research Awards
Summer funding to travel to the Mayo Clinic where she participated in undergraduate research through the Summer Undergraduate Research Fellowship (SURF) program at the Mayo Clinic. While there, she worked with Kay Medina, Ph.D. She presented her work at the annual meeting of the ACA, and the annual meeting of the Society of Toxicology.
Total award: \$1,000
- Catherine Michelle Lassiter 2007
Appalachian College Association (ACA) Ledford Student Research Awards
Summer stipend to work on a project entitled "Assessment of Current Community Resources in Bristol VA/TN". She presented her work at the annual ACA meeting.
Total award: \$3,500

Peer-Reviewed Publications

- Richardson JR, **Fitsanakis VA**, Westerink R, Kanthasamy AG (2019). Neurotoxicity of pesticides. *Acta Neuropathologica*. **138**:343-62. (PMID: 31197504)
- Gray JP, Curran CP, **Fitsanakis VA**, Ray S, Stine KE, Eidemiller BJ (2019). Society of Toxicology develops learning objectives for undergraduate toxicology courses following the Vision and Change core concepts model. *Tox Sci*. **170**: 20-4. (PMID: 30968141)
- Burchfield SB, Bailey DC, Todt CE, Denney, RD, Negga R, **Fitsanakis VA** (2019). Acute exposure to a glyphosate-containing herbicide formulation inhibits Complex II and increases hydrogen peroxide in the model organism *Caenorhabditis elegans*. *Environ Toxicol Pharmacol*. **66**:36-42. (PMID: 30594848)
- Montgomery K, Corona C, Frye RL, Barnett RE, Bailey A, **Fitsanakis VA** (2018). Transport of a manganese/zinc ethylene-*bis*-dithiocarbamate fungicide may involve pre-synaptic dopaminergic transporters. *Neurotoxicol Teratol*. **68**:66-71. (PMID: 29807111)
- Bailey DC, Todt CE, Burchfield SL, Pressley AS, Denney RD, Snapp IB, Negga R, Traynor WL, **Fitsanakis VA** (2018). Chronic exposure to a glyphosate-containing pesticide leads to mitochondrial dysfunction and increased reactive oxygen species production in *Caenorhabditis elegans*. *Environ Toxicol Pharmacol*. **20**:46-52. (PMID: 29190595)
- Todt CE, Bailey DC, Pressley AS, Orfield SE, Denney RD, Snapp IB, Negga R, Bailey AC, Montgomery KM, Traynor WL, **Fitsanakis VA** (2016). Acute exposure to a Mn/Zn ethylene-*bis*-dithiocarbamate fungicide leads to mitochondrial dysfunction and increased reactive oxygen species production in *Caenorhabditis elegans*. *NeuroToxicology*. **57**:112-20. (PMID: 27663847)
- Bailey DC, Todt CE, Orfield SE, Denney RD, Snapp IB, Negga R, Montgomery KM, Bailey AC, Pressley AS, Traynor WL, **Fitsanakis VA** (2016). *Caenorhabditis elegans* chronically exposed to a Mn/Zn ethylene-*bis*-dithiocarbamate fungicide show mitochondrial Complex I inhibition and increased reactive oxygen species *NeuroToxicology*. **56**:170-9. (PMID: 27502893)
- McVey KA, Snapp IB, Johnson MB, Negga R and **Fitsanakis VA** (2016). Exposure of *C elegans* eggs to a glyphosate-containing herbicide leads to abnormal neurodevelopment. *Neurotox Teratol*. **55**:23-31. (PMID: 27019975)

VANESSA A. FITSANAKIS, PhD, ATS Fellow
Toxicologist/Neuroscientist

- McVey KA, Mink JA, Snapp IB, Timberlake WS, Todt CE, Negga R and **Fitsanakis VA** (2012). *Caenorhabditis elegans*: An emerging model system for pesticide neurotoxicity. *J Environ Anal Toxicol* **S4**(003). doi: 10.4172/2161-0525.S4-003.
- Barchowsky A, Buckley LA, Carlson GP, **Fitsanakis VA**, Ford SM, Genter MB, Germolec DR, Leavens TL, Lehman-McKeeman LD, Safe SH, Sulentic CE, Eidemiller BJ (2012). The Toxicology Education Summit: building the future of toxicology through education. *Toxicol Sci* **127**(2):331-8. (PMID: 22461448)
- Negga R, Stuart JA, Machen ML, Salva J, Lizek AJ, Richardson SJ, Osborne AS, Mirallas O, McVey KA and **Fitsanakis VA** (2012). Exposure to glyphosate- or Mn/Zn-ethylene-*bis*-dithiocarbamate-containing pesticides leads to degeneration of γ -aminobutyric acid and dopamine neurons in *Caenorhabditis elegans*. *Neurotox Res* **12**(3):281-90. (PMID: 21922334)
- Negga R, Rudd DA, Davis NS, Justice AN, Hatfield HE, Valente AL, Fields AS and **Fitsanakis VA** (2011). Exposure to Mn/Zn ethylene-*bis*-dithiocarbamate and glyphosate pesticides leads to neurodegeneration in *Caenorhabditis elegans*. *Neurotoxicology* **32**(3):331-41. (PMID: 21376751)
- Fitsanakis VA**, Zhang N, Avison MJ, Erikson KM, Gore JC, Aschner M (2011). Changes in dietary iron exacerbate regional brain manganese accumulation as determined by magnetic resonance imaging (MRI). *Tox Sci* **120**(1): 146-53. (PMID: 21177776)
- Fitsanakis VA**, Zhang N, Garcia SJ, Aschner M (2010). Manganese (Mn) and Iron (Fe): Interdependency of Transport and Regulation. *Neurotox Res* **18**(2):124-31 (PMID: 19921534)
- Stanwood GD, Leitch DB, Savchenko V, Wu J, **Fitsanakis VA**, Anderson DJ, Stankowski JN, Aschner M, McLaughlin B (2009). Manganese exposure is cytotoxic and alters dopaminergic and GABAergic neurons within the basal ganglia. *J Neurochem* **110**(1):378-89. (PMID: 19457100)
- Fitsanakis VA**, Thompson KN, Deery SE, Milatovic D, Shihabi, ZK, Erikson KM, Brown RW, Aschner M (2009). A chronic iron-deficient/high manganese diet in rodents results in increased brain oxidative stress and behavioral deficits in the Morris water maze. *Neurotox Res* **15**(2):167-78. (PMID: 19384579)
- Zhang N, **Fitsanakis VA**, Erikson MK, Aschner M, Avison MJ, Gore JC (2009). A model of the analysis of competitive relaxation effects of manganese and iron *in vivo*. *NMR in Biomed* **22**(4):391-404. (PMID: 19137511)
- Finkelstein Y, Zhang N, **Fitsanakis VA**, Avison MJ, Gore JC, Aschner (2008). Differential deposition of manganese in the rat brain following subchronic exposure to manganese: A T1-weighted MRI study. *J Israel Med Assoc* **10**(11): 793-8. (PMID: 19070289)
- Fitsanakis VA**, Zhang N, Anderson JG, Erikson KM, Gore JC, Aschner M (2008). Measuring brain manganese and iron accumulation in rats following 14-weeks of low-dose manganese treatment using atomic absorption spectroscopy (AAS) and magnetic resonance imaging (MRI). *ToxSci* **103**(1):116-24. (PMID: 18234737)
- Fitsanakis VA**, Piccola G, dos Santos APM, Aschner JL and Aschner M (2007). Putative proteins involved in manganese transport across the blood-brain barrier. *Human Exper Toxicol* **26**(4): 295-302. (PMID: 17615110)
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- Fitsanakis VA**, Zhang N, Avison MJ, Gore JC, Aschner JL and Aschner M (2006). The use of magnetic resonance imaging (MRI) in the study of manganese neurotoxicity. *Neurotoxicology*. **27**(5): 798-806. (PMID: 16620989)

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- Aschner M, **Fitsanakis VA**, dos Santos AP, Olivi L, Bressler JP (2006). Blood-brain barrier and cell-cell interactions: Methods for establishing *in vitro* models of the blood-brain barrier and transport measurements. *Methods Mol Biol* **341**:1-15. (PMID 16799185)
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- Fitsanakis VA**, Erikson KM, Garcia SJ, Evje L, Syversen T and Aschner M (2006). Brain accumulation of depleted uranium in rats following 3- or 6-month treatment with implanted depleted uranium pellets. *Biol Trace Elem Res.* **111**(1-3): 185-97. (PMID: 16943605)
- Fitsanakis VA**, Au C, Erikson KM and Aschner M (2006). The effects of manganese on glutamate, dopamine and γ -aminobutyric acid regulation. *Neurochem Int.* **48**(6-7): 426-33. (PMID: 16513220)
- Fitsanakis VA**, Piccola G, Aschner JL and Aschner M (2006). Characteristics of manganese (Mn) transport in rat brain endothelial (RBE4) cells, an *in vitro* model of the blood-brain barrier. *Neurotoxicology* **27**(1): 60-70. (PMID: 16169084)
- Mutkus L, Aschner JL, **Fitsanakis VA** and Aschner M (2005). The *in vitro* uptake of glutamate in GLAST and GLT-1 transfected mutant CHO-K1 cells is inhibited by manganese. *Biol Trace Elem Res* **107**(3): 221-30. (PMID: 16286678)
- Fitsanakis VA**, Piccola G, Aschner JL and Aschner M (2005). Manganese transport by rat brain endothelial (RBE4) cell-based transwell model in the presence of astrocyte conditioned media. *J Neurosci Res* **81**(2): 235-43. (PMID: 15948148)
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- Zhang J, **Fitsanakis VA**, Gu G, Jing D, Ao M, Amarnath V, Montine TJ (2003). Manganese ethylene-bis-dithiocarbamate and selective dopaminergic neurodegeneration in rat: A link through mitochondrial dysfunction. *J Neurosci.* **84**: 336-46. (PMID: 12558996)
- Fitsanakis VA**, Amarnath V, Moore JT, Zhang J, Montine KS, Montine TJ (2002). Catalysis of catechol oxidation by metal-dithiocarbamates complexes in pesticides. *Free Rad Bio Med.* **33**(12): 1714-23. (PMID: 12488139)
- Thomas VA**, Wheelless CJ, Stack MS, Johnson DA (1998). Human mast cell tryptase fibrinogenolysis: Kinetics, anticoagulation mechanism, and cell adhesion disruption. *Biochemistry.* **37**(8): 2291-8. (PMID: 9485375)

Book Chapters

- Fitsanakis VA**, Negga R, and Hatfield HE (2019). "Mechanistic Toxicology Biomarkers in *Caenorhabditis elegans*" in *Biomarkers in Toxicology*, 2nd Edition. Gupta R, editor. Elsevier Press, New York, NY.
- Williams DC, Bailey DC, and **Fitsanakis VA** (2017). "*Caenorhabditis elegans* as a Model to Assess Reproductive and Developmental Toxicity" in *Reproductive and Developmental Toxicology*, 2nd Edition. Gupta R, editor. Elsevier Press, New York, NY.

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Barnett RE, Bailey DC, Hatfield, HE, and **Fitsanakis VA** (2016). “*Caenorhabditis elegans*: A Model Organism for Nutraceutical Safety and Toxicity Evaluation” in *Nutraceuticals: Efficacy, Safety, and Toxicity*, Gupta R, editor. Elsevier Press, New York, NY.

Fitsanakis VA, Negga R, and Hatfield HE (2014). “Human Disease Biomarkers in *Caenorhabditis elegans*” in *Biomarkers*, Gupta R, editor. Elsevier Press, New York, NY.

Aschner M, **Fitsanakis VA**, dos Santos APM, Olivi L and Bressler JP (2005). “Blood-brain barrier and cell-cell interactions: Methods for establishing *in vitro* models of the blood-brain barrier and transport measurements” in *Cell-Cell Interactions in Health and Disease: Methods in Molecular Biology*, Colgan SP, editor. Humana Press, Inc: Totowa, NJ.

Fitsanakis VA, Garcia SJ, Aschner M (2004). “Manganese Dynamics, Distribution and Neurotoxicity”, in *The Role of Glia in Neurotoxicity*, M Aschner and LG Costa, editors. CRC Press: Boca Raton, FL.

Abstracts and Poster Presentations

Ignacz A, Eisel N, Rivenbark K, and **Fitsanakis VA** (2019). Parkinson's disease-relevant gene mutations render *C. elegans* more vulnerable to mancozeb fungicide exposure and mitochondrial hyperpolarization. 58th Annual Meeting Society of Toxicology, Baltimore, MD.

Kennedy S, Cole SB, Frye R, Vaughan LK, and **Fitsanakis VA** (2018). Structure-function studies in *Caenorhabditis elegans* of the organometallic fungicide manzate indicate mechanisms for neurodegeneration. 57th Annual Meeting Society of Toxicology, San Antonio, TX.

Vaughan LK, Williams DC, and **Fitsanakis VA** (2018). Using *C. elegans* to teach genetics, bioinformatics, and neurotoxicology at underfunded undergraduate institutions. 57th Annual Meeting Society of Toxicology, San Antonio, TX.

Fitsanakis VA and Vaughan LK (2018). Integrating bioinformatics and neurotoxicology into a research-based course for undergraduates. 57th Annual Meeting Society of Toxicology, San Antonio, TX.

Gray JP, Curran CP, **Fitsanakis VA**, Ray SD, Stine KE, and Eidemiller B (2018). Foundational concepts in undergraduate toxicology: Applying Vision and Change to the development of core concepts and learning objectives for an undergraduate toxicology course. 57th Annual Meeting Society of Toxicology, San Antonio, TX.

Sale CM, **Fitsanakis VA** (2016). Incubation of the Mn/Zn-containing fungicide manzate with dopamine does not catalyze redox reactions. 55th Annual Meeting Society of Toxicology, New Orleans, LA.

Corona CL, Montgomery KM, McVey KA, Snapp IB, **Fitsanakis VA** (2016). Potential mechanism of neuronal entry of a glyphosate-containing herbicide in *C. elegans*. 55th Annual Meeting Society of Toxicology, New Orleans, LA.

Fitsanakis VA and Traynor WL (2015). Using "Explain Everything" to augment biology classroom instruction. Gordon Research Conference: Undergraduate Biology Education Research—Investigating and Implementing Evidence-Based Reform, Bates, ME.

Bailey AC, Nichols RH, Bailey DC, Barnett, RE, and **Fitsanakis VA** (2015). Transport of a Mn/Zn ethylene-bis-dithiocarbamate fungicide occurs via SMF-3, but not neurotransmitter transporters, in *C. elegans*. 54th Annual Meeting Society of Toxicology, San Diego, CA.

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- Burchfield SL, Bailey AC, Widner DB, Montgomery KM, Bailey DC, Todt CE, and **Fitsanakis VA** (2015). Transport of glyphosate in *Caenorhabditis elegans* is not mediated via presynaptic neurotransmitter transporters. 54th Annual Meeting Society of Toxicology, San Diego, CA.
- Burchfield, SL, Todt CE, Bailey DC, Negga R, **Fitsanakis VA** (2014). Treatment of *Caenorhabditis elegans* with a glyphosate-containing herbicide leads to mitochondrial inhibition. 6th Annual Undergraduate Research Conference at the Interface of Biology and Mathematics, National Institute for Mathematical and Biological Synthesis, Knoxville, TN.
- Donaldson RA, Negga R, and **Fitsanakis VA** (2014). Chronic, but not acute, treatment of *Caenorhabditis elegans* with TouchDown leads to increased oxidative stress. 53rd Annual Meeting Society of Toxicology, Phoenix, AZ.
- Bailey DC, Negga R, Todt CE, Barnett RE, and **Fitsanakis VA** (2014). Chronic exposure to TouchDown, a glyphosate-containing herbicide leads to mitochondrial inhibition in *Caenorhabditis elegans*. 53rd Annual Meeting Society of Toxicology, Phoenix, AZ.
- Orfield SE, Nichols RH, Burchfield SL, and **Fitsanakis VA** (2014). Treatment of *Caenorhabditis elegans* with either a glyphosate-containing herbicide or manzate leads to decreased ATP levels. 53rd Annual Meeting Society of Toxicology, Phoenix, AZ.
- Shelton AD, Negga R, Bailey DC, and **Fitsanakis VA** (2014). Detection of reactive oxygen species in *Caenorhabditis elegans* after exposure to glyphosate- or Mn/Zn ethylene-*bis*-dithiocarbamate-containing pesticides. 53rd Annual Meeting Society of Toxicology, Phoenix, AZ.
- Todt CE, Negga R, Jadav SK, Bailey DC, and **Fitsanakis VA** (2014). Acute exposure to a glyphosate-containing herbicide leads to mitochondrial dysfunction in *Caenorhabditis elegans*. 53rd Annual Meeting Society of Toxicology, Phoenix, AZ.
- Bailey DC, Johnson MB, Hodges K, Smith K, Todt CE, Barnett RE, Negga R, and **Fitsanakis VA** (2013). Exposure to glyphosate-containing herbicide leads to mitochondrial inhibition in *C. elegans*. 44th Annual Meeting Environmental Mutagenesis and Genomics Society, Monterey, CA.
- Fitsanakis VA**, McVey KA, Snapp IB, and Negga R (2013). Both pre-fertilization and *in utero* exposure to glyphosate-containing herbicide leads to neurodegeneration in *C. elegans*. 44th Annual Meeting Environmental Mutagenesis and Genomics Society, Monterey, CA.
- Fitsanakis VA**, Negga R, Rudd DA, Davis NS and Lizek AJ (2013). Exposure to Mn/Zn ethylene-*bis*-dithiocarbamate and glyphosate pesticides leads to neurodegeneration in the model organism *Caenorhabditis elegans*. 11th International Conference on Alzheimer's and Parkinson's Diseases, Florence, Italy.
- McVey KA, Snapp IB, Negga R, and **Fitsanakis VA** (2013). Exposure to glyphosate containing herbicides leads to impaired neurodevelopment in *Caenorhabditis elegans*. 11th International Conference on Alzheimer's and Parkinson's Diseases, Florence, Italy.
- Snapp IB, McVey KA, Negga R, and **Fitsanakis VA** (2013). Effect of glyphosate exposure on antioxidant protein expression in larval-stage *Caenorhabditis elegans*. 11th International Conference on Alzheimer's and Parkinson's Diseases, Florence, Italy.
- Fitsanakis VA**, McVey KA, Negga R, and Snapp IB (2012). Impacts of federal grant funding. Appalachian College Association (ACA) 2012 Summit XV, Knoxville, TN.

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- Snapp IB, McVey KA, Negga R and **Fitsanakis VA** (2012). Dual exposures of a glyphosate-containing herbicide followed by a manganese/zinc ethylene-*bis*-dithiocarbamate-containing fungicide lead to increased oxidative stress in *Caenorhabditis elegans*. 51st Annual Meeting Society of Toxicology, San Francisco, CA.
- McVey KA, Snapp IB, Negga R and **Fitsanakis VA** (2012). Exposure to glyphosate-containing herbicides leads to oxidative stress in *Caenorhabditis elegans*. 51st Annual Meeting Society of Toxicology, San Francisco, CA.
- Graham JG and **Fitsanakis VA** (2011). Applying "Drawing to Learn" principles to neuroscience course topics as a group project. Annual Meeting of the Society for Neuroscience, Washington, DC.
- Negga R, Johnson MB and **Fitsanakis VA** (2011). Treatment of *Caenorhabditis elegans* with glyphosate suggests offspring and reproductive toxicity. Platform presentation at 3rd International Conference on Alternatives for Developmental Neurotoxicity Testing (DNT 3), Varese, Italy.
- Fitsanakis VA** (2011). Reinforcing quantitative skills through data analysis in an undergraduate toxicology course. 50th Annual Meeting Society of Toxicology, Washington, DC.
- Negga R, Machen M, Salva J and **Fitsanakis VA** (2011). Treatment of *Caenorhabditis elegans* with glyphosate or manzate suggests selective neuronal degeneration. 50th Annual Meeting Society of Toxicology, Washington, DC.
- Johnson MB and **Fitsanakis VA** (2011). Treatment of *Caenorhabditis elegans* with glyphosate suggests developmental and reproductive toxicity. 50th Annual Meeting Society of Toxicology, Washington, DC.
- Aschner M, Milatovic D, Zhang N, Williams J, Erikson KM, Avison MJ and **Fitsanakis VA** (2010). Metals and oxidative impairment in neurodegenerative disorders. 49th Annual Meeting Society of Toxicology, Salt Lake City, UT.
- Richardson SJ, Smith AL, Johnson MB, Fields AS, Valente AL and **Fitsanakis VA** (2010). Exposure to glyphosate-containing herbicides or combined treatment with manzate leads to neurodegeneration in *Caenorhabditis elegans*. 49th Annual Meeting Society of Toxicology, Salt Lake City, UT.
- Stuart JA, Barnett RE and **Fitsanakis VA** (2010). Neuronal degeneration following TouchDown exposure in *C. elegans* may be due to oxidative stress. 49th Annual Meeting Society of Toxicology, Salt Lake City, UT.
- Negga R, Mirallas O, Davis NS and **Fitsanakis VA** (2010). Oxidative stress may lead to neurodegeneration in *Caenorhabditis elegans* following chronic exposure to Mancozeb. 49th Annual Meeting Society of Toxicology, Salt Lake City, UT.
- Smith TJ, Tantawy N, Peterson T and **Fitsanakis VA** (2009). Brain glucose utilization following chronic manganese exposure in male Sprague-Dawley rats. 48th Annual Meeting Society of Toxicology, Baltimore, MD.
- Negga R, Rudd DA, Davis NS, Barnett RE, Hatfield HE, Stuart JA and **VA Fitsanakis** (2009). Treatment of *Caenorhabditis elegans* with RoundUp and Manzate suggests lethality mediated by mitochondrial inhibition. 48th Annual Meeting Society of Toxicology, Baltimore, MD.
- Justice AN, Barnett RE, Valente AL and **VA Fitsanakis** (2009). Exposure of *C. elegans* to the glyphosate-containing pesticide RoundUp leads to dopaminergic neuronal degeneration and mitochondrial inhibition. 48th Annual Meeting Society of Toxicology, Baltimore, MD.

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- Smith TJ and **Fitsanakis VA** (2008). Assaying manganese toxicity using positron emission tomography. 11th Annual Undergraduate Research Symposium in the Chemical and Biological Sciences. University of Maryland, Baltimore County, Baltimore, MD.
- Rudd DA, Davis NS, Negga R, Barnett RE, Hatfield HE and **Fitsanakis VA** (2008). Determination of the LC₅₀ for RoundUp and Manzate in *Caenorhabditis elegans*. 11th Annual Undergraduate Research Symposium in the Chemical and Biological Sciences. University of Maryland, Baltimore County, Baltimore, MD.
- Justice AN and **Fitsanakis VA** (2008). Acute treatment with RoundUp may lead to neuronal degeneration in *C. elegans*. 11th Annual Appalachian College Association Summit, Abingdon, VA.
- Barnett RE and **Fitsanakis VA** (2008). Investigation of mitochondrial dysfunction induced by RoundUp in *Caenorhabditis elegans*. 11th Annual Appalachian College Association Summit, Abingdon, VA.
- Smith TJ and **Fitsanakis VA** (2008). Using positron emission tomography to determine brain manganese deposition. 11th Annual Appalachian College Association Summit, Abingdon, VA.
- Rudd DA, Davis NS, Negga R Hatfield H, Barnett RE and **Fitsanakis VA** (2008). Determination of the LC₅₀ for RoundUp and Manzate in *Caenorhabditis elegans*. 47th Annual Meeting Society of Toxicology, Seattle, WA.
- Rudd DA, Davis NS, Negga R and **Fitsanakis VA** (2008). Using *C. elegans* to determine the LC₅₀ for RoundUp and Manzate. 1st Annual Meeting Appalachian Society for Neuroscience, Johnson City, TN.
- Rudd DA, Davis NS, Negga R, and **Fitsanakis VA** (2007). Determination of the LC₅₀ and effect on progeny of RoundUp and Manzate. 10th Annual Appalachian College Association Summit, Abingdon, VA.
- Zhang N, **Fitsanakis VA**, Avison MJ, Aschner M and Gore JC (2006). Variations in relaxivity of manganese between regions in rat brain. 14th Annual Meeting International Society of Magnetic Resonance in Medicine, Seattle, WA.
- Fitsanakis VA**, Milatovic D, Gupta RC and Aschner M (2006). Oxidative stress and impaired energy metabolism after exposure to manganese. 45th Annual Meeting Society of Toxicology, San Diego, CA.
- Zhang N, **Fitsanakis VA**, Anderson JG, Erikson KM, Gore JC, Avison MJ and Aschner M (2006). Determination of brain manganese accumulation using magnetic resonance imaging (MRI) and atomic absorption spectroscopy. 45th Annual Meeting Society of Toxicology, San Diego, CA.
- Aschner M, **Fitsanakis VA** and Erikson KM (2006). Dietary iron modulates manganese neurotoxicity. 45th Annual Meeting Society of Toxicology, San Diego, CA.
- Fitsanakis VA**, Erikson KM, Garcia SJ, Syverson T and Aschner M (2005). Determination of depleted uranium (DU) in rats following 3- or 6-month exposure to surgically implanted DU pellets. 44th Annual Meeting Society of Toxicology, New Orleans, LA.
- Thompson KN, **Fitsanakis VA**, Garcia S, Aschner M and Brown RW (2004). Long-term iron deficiency in rats results in cognitive deficits on the Morris Water Maze. 34th Annual Meeting Society for Neuroscience, San Diego, CA.
- Fitsanakis VA**, Amarnath V, Zhang J, Montine TJ, Graham DG (2002). Ethylene-*bis*-dithiocarbamates can inhibit isolated brain and liver mitochondria. 41st Annual Meeting Society of Toxicology, Nashville, TN.
- Fitsanakis VA**, Amarnath V, Graham DG, Montine TJ, (2001). Dithiocarbamate-metal complexes plus dopamine, but not DOPAC, generates reactive oxygen species *in vitro*. 19th International Neurotoxicology Conference, Colorado Springs, CO.

VANESSA A. FITSANAKIS, PhD, ATS Fellow
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- Fitsanakis VA**, Amarnath V, Montine TJ, Graham DG (2000). Diethyldithiocarbamate complexes catalyze the formation of catechol thioethers. 39th Annual Meeting Society of Toxicology, Philadelphia, PA.
- Erve J, Jensen O, Valentine H, **Fitsanakis V**, Valentine B (1999). Disulfiram generates an *N, N*-diethylthiocarbamoyl adduct on Cys-125 of rat hemoglobin after *in vivo* administration. 47th Annual Meeting American Society for Mass Spectrometry, Dallas, TX.
- Thomas VA** and Johnson DA (1996). Trypsin fibrinogenolysis of α - and β -chains: kinetics and cleavage sites. East TN State University Undergraduate Research Forum, Johnson City, TN.
- Thomas VA** and Schirch V (1995). Initial screening for conditions suitable for crystallization of apo-serine hydroxy-methyltransferase (SHMT). Blue Ridge Undergraduate Research Conference, Milligan College, TN.

Oral Presentations: Invited Presentations Providing Continuing Education Credit

- “Weaponizing Toxicology” 2019
Kingsport Alliance for Continued Learning
East Tennessee State University
- “Common Toxic Chemicals in Our Environment: A Series of Four Lectures” 2017
Kingsport Alliance for Continued Learning
East Tennessee State University
- “Every Day Toxicology: Introduction, Mechanisms, and Case Studies” 2015
Kingsport Alliance for Continued Learning
East Tennessee State University
Kingsport, TN
- “The Brain: A Series of Four Lectures” 2015
Kingsport Alliance for Continued Learning
East Tennessee State University
Kingsport, TN
- “Reviewing Neuroanatomy Associated with the Neurological Exam” 2014
Beyond the Basics
Bristol Regional Medical Center
Bristol, TN
- “Traumatic Brain Injury & Stroke: Is There a Link?” 2013
12th Annual Stroke Symposium
Bristol Regional Medical Center
Bristol, TN
- “Herbicide Exposure & the Potential Contribution to Parkinson's Disease” 2013
Bristol Regional Medical Center Physician Grand Rounds
Bristol Regional Medical Center
Bristol, TN

THE EXPERTS
Robson Forensic

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“Toxicology of Designer Drugs” Beyond the Basics Bristol Regional Medical Center Bristol, TN	2012
“Clinical Cases Involving Non-Cortical Stroke: Anatomical Explanations” 10 th Annual Stroke Symposium Bristol Regional Medical Center Bristol, TN	2011
“Traumatic Brain Injury and Dementia” Bristol Regional Medical Center Physician Grand Rounds Bristol Regional Medical Center Bristol, TN	2011
“Neuroanatomy & Physiology–A Review” 9 th Annual Stroke Symposium Bristol Regional Medical Center Bristol, TN	2010
“Parkinson’s Disease (PD): Understanding Symptoms & Anatomy” Beyond the Basics Bristol Regional Medical Center Bristol, TN	2010
“Ischemic Stroke: Vasculature and Genetics” Bristol Regional Medical Center Physician Grand Rounds Bristol Regional Medical Center Bristol, TN	2010
“Basic Neuroanatomy: An Interactive Workshop” Beyond the Basics Bristol Regional Medical Center Bristol, TN	2009
“Pesticides and Parkinson’s Disease” Bristol Regional Medical Center Physician Grand Rounds Bristol Regional Medical Center Bristol, TN	2009
“The Human Brain: What Do Those Areas Do?” Lunch and Learn Bristol Regional Medical Center Bristol, TN	2009
“Principles of Neurotoxicology” Professional Development Seminar Winston-Salem/Forsyth County School System Winston-Salem, NC	2004

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Local/Regional Presentations

- “Neurotoxicity Associated with the Manganese-Containing Fungicide Mancozeb” 2018
Pittsburgh Area Worm Club
University of Pittsburgh and UPMC Magee-Womens Hospital
Pittsburgh, PA
- “Assessing Gene-Environment Interactions in *Caenorhabditis elegans* for Parkinson’s Disease” 2018
Biomedical Sciences Graduate Student Seminar Series
Kent State University
Kent, OH
- “Using *C. elegans* to Assess Neurodegeneration Related to Pesticide Exposure” 2017
Biomedical Sciences Graduate Student Seminar Series
Kent State University
Kent, OH

Peer-reviewed Presentations

- “Brain-Based Learning: Explanations and Strategies” 2009
Education-Career Development Session: Toxicologists: The Next Generation
48th Annual Meeting of the Society of Toxicology
Baltimore, MD
- “Synchronizing for Student Success: Cooperation Among Admissions, Biology & Nursing” 2008
Appalachian College Association (ACA) Break-Out Session
11th Annual ACA Summit
Abingdon, VA
- “Developing a Collaborative Research Program in Nanotechnology and Toxicology” 2008
Appalachian College Association (ACA) Break-Out Session
11th Annual ACA Summit
Abingdon, VA
- “Leave Them Wanting More: Strategies to Revitalize Your Course Presentation” 2007
Appalachian College Association (ACA) Break-Out Session
10th Annual ACA Summit
Abingdon, VA

Invited Academic Presentations

- “Assessing the Role of Genes and Environment in Parkinson’s Disease” 2019
Tox Scholar and John S. Toll Fellows Program Lecturer
Washington College
Chestertown, MD

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- “Neurotoxicity Associated with the Manganese-Containing Fungicide Mancozeb” 2017
Student Invited Speaker Presentation
Central States Society of Toxicology Meeting
Ames, IA
- “Reducing Wiggle Room in Data Generated from *C. elegans*” 2017
Platform Presentation
41st Annual Developmental Neurotoxicology Society Meeting
Denver, CO
- “*C. elegans* Treated with the Fungicide Manzate Show Mitochondrial Inhibition and Elevated ROS” 2016
Research Presentation
Department of Pharmaceutical Sciences Seminar Series
Northeast Ohio Medial University
Rootstown, OH
- Research Presentation**
- “*C. elegans* Treated with the Glyphosate-Containing Herbicide Touchdown Show Mitochondrial Inhibition and Elevated ROS” 2015
Duke University Toxicology Seminar Series
Duke University
Raleigh, NC
- “Both Pre-Fertilization and *In Utero* Exposure to Glyphosate-Containing Herbicide Leads to Neurodegeneration in *C. elegans*” 2013
New Technologies Special Interest Group Breakfast
44th Annual Meeting Environmental Mutagenesis and Genomics Society
Monterey, CA
- “Potential Neurodegeneration in *C. elegans* following Chronic Exposure to Glyphosate-Containing Herbicides” 2013
Research Presentation
Environmental and Occupational Health Sciences Institute (EOHSI) Seminar Series
Rutgers University
Piscataway, NJ
- “Neurodegeneration in *C. elegans* Following Pesticide Exposure” 2011
Research Presentation
Columbia University School of Public Health
Department of Environmental Health Sciences
New York, NY
- “Maneb, A Mn-Containing Pesticide, and Parkinson's Disease: Potential Mechanisms of Neurotoxicity” 2003
Biological Sciences Seminar Series
East Tennessee State University
Johnson City, TN

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Toxicologist/Neuroscientist

“Maneb and Parkinson’s Disease” Graduate Student/Postdoctoral Fellow Seminar Series Department of Physiology and Pharmacology Wake Forest University Medical School Winston-Salem, NC	2003
“Mechanisms of Neurotoxicity of Manganese Ethylene- <i>bis</i> -Dithiocarbamate: A Structure-Function Approach” Milligan College Science Seminar Series Johnson City, TN	2003
“Neurotoxic Mechanisms of Maneb” Invited Speaker Series Neurotoxicology Division Environmental Protection Agency Durham, NC	2002
Professional Community Activities	
Panel Member, Exploring Academic and Toxicology Careers in Pharmacy (P3) Northeast Ohio Medical University	2019
Panel Member, Exploring Toxicology-Related Careers in Pharmacy (P1) Northeast Ohio Medical University	2019
Judge, Annual Research Day Kent State University	2018
Scientific Co-Chair, Neurotoxicity of Pesticides Annual Meeting of the Society of Toxicology	2018
Organizer, Neurotoxicology Specialty Section Student/Postdoc Poster Competition Society of Toxicology	2017-2019
Judge, Neurotoxicology Specialty Section Student/Postdoc Poster Competition Society of Toxicology	2008-2016
Contributor (Invited), Educational Summit for Undergraduate Society of Toxicology Education Committee	2011
Panel Member, Toxicologists Educating and Mentoring Students (TEAMS) Society of Toxicology	2008
Chair, Lab Sciences Section of the Ledford Scholars Meeting Annual Summit of the Appalachian College Association	2008
Scientific Co-Chair, Neurotoxicity of Metals: Dosimetry and Effects Annual Meeting of the Society of Toxicology	2005
Teacher Workshop Coordinator, Paracelsus Goes to School Annual Meeting of the Society of Toxicology	2002

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Toxicologist/Neuroscientist

Chair, Student-Invited Speaker Committee, Neuroscience Student Organization Vanderbilt University	2001-2002
Co-Chair, Student-Invited Speaker Committee, Toxicology Student Organization Vanderbilt University	2000-2001
General Community (Lay Audience) Presentations	
“Your Brain is Awesome!”, Pre-K3 Students (20 students) Creative Learning Center Bristol, TN	2017
“Basic Neuroanatomy and What It Means to You” Cold Spring Community Center Bristol, TN	2017
Coordinator, “It’s Brain Day!”, 3 rd -6 th Grade (265 students) Castlewood Elementary School Castlewood, VA	2012
“What is College and How Do I Get There?”, Junior and Senior High School Students Richlands High School (Fewer than 15% of students from here go on to college) Richlands, VA	2012
“This is Your Brain”, Pre-K to 7 th Grades Bristol Area Home School Coalition Bristol, TN	2011
“Helmet Safety and Your Beautiful Brain”, Pre-K to 5 th Grades Russell Prater Elementary School Vansant, VA	2011
Panelist and Presenter, “12th Annual Celebrating Women Luncheon and Silent Auction” YWCA Bristol, TN	2010
“The Beautiful Brain”, Central Presbyterian Church Wednesday Night Program Central Presbyterian Church Bristol, VA	2010
Mistress of Ceremony, 1 st Annual Community Celebration Renaming of Martin Luther King Jr Blvd Bristol, TN/VA	2008
Fund Manager, Martin Luther King Jr Team Bristol, TN/VA	2008
Mentor, Bristol Youth Leadership Class Bristol Tennessee/Virginia Chamber of Commerce Bristol, TN/VA	2008

THE EXPERTS
Robson Forensic

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“Gender and Power: What is ‘Woman’s Work?’” King University Snider Honors Seminar Series Bristol, TN	2008
“Human Experimentation During WWII: Lessons (?) from History” King World Awareness and Activation Club Bristol, TN	2008
Presenter/Facilitator, “Depleted Uranium: What is This Stuff?” Christian Peace Makers Erwin, TN	2007
“The Growth of Science at King College” Bristol VA/TN Noon Rotary Club Bristol, VA	2007
“Current Toxicology Research in the King University Department of Biology” Bristol VA/TN Noon Rotary Club Bristol, VA	2007
Co-Organizer, K-12 Curricular Materials, “Paracelsus Explores the Genome” San Diego Natural History Museum Family Day Society of Toxicology San Diego, CA	2006
“Neurotoxicology: A Great Way to Use a Liberal Arts Education” 51 st Annual King University Science Open House Bristol, TN	2006
“Brain Awareness Month: Stroke” Family Night Supper Series at Cold Spring Presbyterian Church Bristol, TN	2004
Chief Organizer, Brain Awareness SciWorks Science Museum Winston-Salem, NC	2003-2004
Co-Organizer, Brain Awareness Forsythe County School system Winston-Salem, NC	2003-2004
Co-Organizer, Community Health Fair Radnor Neighborhood Association and Woodbine Community Organization Nashville, TN	2002
Presenter, “Parkinson’s Disease”, Annual Brain Awareness Day Cumberland Science Museum Nashville, TN	2000-2002