

CURRICULUM VITAE

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EDUCATION AND TRAINING

Undergraduate

1974-1978 North Carolina State University, Raleigh, NC BS, 1978 Zoology

Graduate

1980-1984 Duke University, Durham, NC Ph.D., 1985 Pharmacology

Post-Graduate

1984-1988 Duke University, Durham, NC Fellowship Toxicology Training Program, Richard Whorton, Ph.D.

APPOINTMENTS AND POSITIONS

ACADEMIC:

2003- Associate Professor (with tenure) Department of Environmental and Occupational Health, Graduate School of Public Health, University of Pittsburgh
2005- Associate Professor (secondary) Department of Pharmacology, School of Medicine, University of Pittsburgh
1998-2003 Associate Professor Department of Pharmacology and Toxicology, Dartmouth Medical School, Hanover, NH
1991-1998 Assistant Professor Department of Pharmacology and Toxicology, Dartmouth

1988-1991	Research Assistant Professor	Medical School, Hanover, NH Division of Clinical Pharmacology, Thomas Jefferson Medical School, Philadelphia, PA
1988-1991	Assistant Professor (secondary)	Department of Pharmacology, Thomas Jefferson Medical School, Philadelphia, PA
1988	Medical Research Associate	Department of Medicine, Duke University, Durham, NC

NON-ACADEMIC

2005	Director	Pittsburgh Environmental Health Sciences Program
2003-2007	Director	University of Pittsburgh Center for the Environmental Basis of Human Disease
2002-	Member, External Advisory Committee	Center for Environmental Sciences, University of Montana-Missoula
2005-	Chair, External Advisory Committee	Center for Environmental Sciences, University of Montana-Missoula
2000-2002	Chair	Radiation Safety Committee, Dartmouth College.
2000-2003	Head, Molecular Biology Core	Center for Environmental Health Sciences, Dartmouth College, Hanover, NH.
1991-2003	Member, Molecular Therapeutics Program	Norris Cotton Cancer Center, Dartmouth Medical School, Hanover, NH.
1991-1994	Clinical Trial Design Consultant	Hoechst Marion Roussel (Marion Merrell Dow), Kansas City, MO.
1988-1991	Head, Laboratory for Investigative Medicine	Division of Clinical Pharmacology, Thomas Jefferson University, Philadelphia, PA
1988-1991	Clinical Trial Design Consultant	Merck Sharp and Dohme Research Laboratories, West Point, PA.

MEMBERSHIP IN PROFESSIONAL AND SCIENTIFIC SOCIETIES

1995- present	North American Vascular Biology Organization (American Society for Investigative Pathology)
2001-present	American Physiological Society
1994-present	Society for Free Radical Biology and Medicine
2001-present	Society of Toxicology (member, Education Committee)
2004-present	Allegheny-Erie Chapter, Society of Toxicology (vice president)

Honors

2005	Best Paper of the Year in Toxicological Sciences, Society of Toxicology
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PROFESSIONAL ACTIVITIES

1. Teaching

a. Courses Taught

University of Pittsburgh:

Years	Course Number: Title	Hours of lecture, credits, average enrollment	Primary Instructor
2009	EOH 2180 Introduction to risk assessment	1.5, 3, 15	Wu
2008-2008	EOH 2022 Pathophysiology	3,3,3	St. Croix
	EOH 2304 Biomarkers and Molecular Epidemiology.	3,2,6	Ragin
2008-	EOH 2310 Molecular Fundamentals of Environmental Health	3, 3, 8	Garte
2007-	MS-2 Medical School Pharmacology Course: Hollow organ	2, ?, 100	Ducker
2007-	MS-2 Medical School Pharmacology Course: Neuropharmacology Workshop	3,?, 10	Yalowich
2007-	EOH 2504 Principles of Environmental Exposure	1.5, 3, 13	Volz
2007-	EOH 2013 Environmental Health and Disease	7.5, 4, 100	Barchowsky
2006	EOH 2175 Principles of Toxicology	1,3, 12	Fabiziak
2006-	MSCMP 3750 Angiogenesis: Molecular Pathways and Physiological Functions	3.75, 3, 7	Cheng
2004- 2007	EOH 2012: Health, Disease, and Environment II	6,1, 110	Barchowsky
2004- 2005	EOH 2309 Bioorganic Toxicology	2, 2, 6	Pitt
2005	EOH 2308 Model Systems	6, 2, 6	Stripp
2004, 2006	EPI 2220: Environmental Epidemiology	1,2,10	Talbott
2004	PA-0101: Introduction to Public Health	2,2,30 undergraduate	Bradford Campus:

Dartmouth Medical School:

- 1992-2002 Medical Pharmacology: 80-90 students; 7 lectures, Course Director: Friedman, Deleo.
- 2002-2003 Medical Pharmacology: 88 students; 7 lectures, Course Director: Barchowsky (second year core medical school course).
- 2002- 2003 Pharmacology 127 Pathophysiology for Pharmacology, Course Directors: Hwa/Barchowsky (co-developed this problem-based course to provide pharmacology students a background in medical physiology)
- 1994- 2003 Pharmacology 129 Principles of Receptor Action, Course Director: Barchowsky (Developed and directed this 40 hour didactic graduate course).
- 2003 Scientific Basis of Medicine: Gastrointestinal Medicine: 90 students, 1 lecture, Course Director: Bensen.
- 1998-2003 Cancer Biology: lecture on angiogenesis, 25 students, Course Director: Eastman.
- 1995-2003 Graduate Toxicology: 5 lectures; 25 students, Course Director: Hamilton
- 1998-2003 Pharmacology 133 Heavy Metals II: 4 lectures, 10 students, Course Director: Sinclair
- 1995-1997 Graduate Pharmacology: 6 lectures; 10 students. Course Director: Craig
- 1995 Advanced Renal Physiology: Renin Angiotensin System: 1 lecture, 5 students, Course Director: Stanton
- 1994 Problem Based Learning in Medicine: mentor for 30 hour, 12 students, Course Director: Nierenberg.
- 1992 Workshop in Pharmacology: Protein Phosphorylation: 10 lectures, 15 students, Course Director: Barchowsky

University of Vermont:

- 1996, 2000, Pathology 305 Molecular Mechanisms of Environmental Disease: 1 lecture;
2002 10 students, Course Director: Mossman.

Thomas Jefferson University:

- 1988-1991 Medical Pharmacology: 4 lectures, 200 students.
- 1991 Advanced Clinical Pharmacology: 2 lectures, 30 students, Course Director: Bjornson

b. Other Teaching

- 1996 Invited lecture Physiology 623 Thomas Jefferson University Oxidant-sensitive signal transduction and gene activation in vascular endothelial cells
- 1998 Society of Toxicology Continuing Education course on “Methods in Cell Signaling” “Cell membranes and cytoplasmic signaling pathways in response to particulate toxicants.

c. Graduate Student Essays, Theses, and Dissertations

University of Pittsburgh

- Adam C. Straub, 2008, Ph.D. Environmental Health Sciences. Thesis Research: Mechanisms for arsenic-stimulated sinusoidal cell capillarization. Present position: Postdoctoral Fellow, University of Virginia.
- Antonia A. Nemeč, 2009, Ph.D. Environmental Health Sciences. Thesis Research: Signaling mechanisms of chromium regulation of protective pulmonary gene inducibility. Present position: Postdoctoral Fellow, Yale University.

Dartmouth Medical School

- Melinda D. Treadwell, 1996, Ph.D. Pharmacology. Thesis Research: Activation of vascular endothelial cells in response to mineral fibers. Present Position: Associate Professor, Keene State College, NH.
- Jennifer A. Shumilla, 1999, Ph.D. Chemistry. Thesis Research: Mechanisms for inhibition of cytokine-induced lung epithelial cell gene expression by chromium. Research Scientist, Theravance, Inc., San Francisco, CA
- MJR Robert R. Roussel, 2000, Ph.D. Pharmacology. Thesis Research: Dose dependent effects of sodium arsenite on NF- κ B and interleukin-8 in bronchial epithelial cells. Present Position: Commander, US Army Forensic Toxicology and Drug Testing Laboratory, Tripler AMC, HA.
- Angeline S. Andrew, 2001, Ph.D. Pharmacology and Toxicology. Thesis Research: Mechanisms for regulation of lung epithelial cell fibrinolysis and cytokine expression by nickel. Present Position: Research Assistant Professor, Dartmouth Medical School, Dept of Epidemiology.
- Nicole V. Soucy, 2003, Ph.D. Pharmacology and Toxicology. Thesis Research: Mechanisms of arsenite-induced vascular disease. Present Position: Principal Research Associate, Preclinical Sciences Interventional Cardiology, Boston Scientific, Maple Grove, MN
- Kimberly A. O'Hara, 2004, Ph.D. Pharmacology and Toxicology. Thesis Research: Signaling mechanisms for chromium-induced gene activation in pulmonary epithelial cells. Post Doctoral Fellow, University of Manitoba, Winnipeg, Canada

d. Student Awards and Honors.

1995	Melinda D. Treadwell	Young Investigator Award, Oxygen Society
1999	Angeline S. Andrew	First Prize, Best Graduate Student Poster Award, Northeast Society of Toxicology
2000	Angeline S. Andrew	Third Annual Karen Wetterhahn Award, Superfund Basic Research Program, National Institute of Environmental Health Sciences.
2000	Angeline S. Andrew	Outstanding Scientific Presentation Award, Oxygen Society
2000	Angeline S. Andrew	Environmental Carcinogenesis Conference Poster Award, Vermont Cancer Center
2000	Angeline S. Andrew	Travel Award - 2000 Conference on Hazardous Waste Research, National Institute of Environmental Health Sciences
2001	Nicole V. Soucy	Young Investigator Award, Oxygen Society

2002	Nicole V. Soucy	Third Place, Metals Specialty Section
2005	Nicole V. Soucy	Best Paper of the Year (2004) in <i>Toxicological Sciences</i> , Society of Toxicology
2002	Kimberley A. O'Hara	Travel Award, Society of Toxicology
2002	Kimberley A. O'Hara	Honorable Mention, Carl C. Smith Graduate Student Award, Mechanisms Specialty Section, Society of Toxicology
2002	Kimberley A. O'Hara	Young Investigator Award, Oxygen Society
2003	Kimberley A. O'Hara	Third Place, Student Abstract Award, New England Pharmacologists
2003	Kimberley A. O'Hara	Taylor & Francis Graduate Student Award, Metals Specialty Section, Society of Toxicology
2004	Kimberley A. O'Hara	Young Investigator Award, Society for Free Radical Biology and Medicine
2005 - 2008	Adam C. Straub	STAR Fellowship award, Environmental Protection Agency
2006	Antonia A Nemec	Allegheny-Erie Society of Toxicology Travel Award
2006	Adam C. Straub	Keleti Prize for Excellence in Environmental Health
2006	Adam C. Straub	Best Poster, Allegheny-Erie Regional Chapter of the Society of Toxicology annual meeting.
2006	Adam C. Straub	Outstanding student in the field of environmental public health. National Center for Environmental Health and the Agency for Toxic Substances and Disease Registry (NCEH/ATSDR).
2006	Harina Vin	MaryAnne Stock Student Research Award, Allegheny-Erie Regional Chapter of the Society of Toxicology
2008	Adam C. Straub	First Place, Doctoral Student Award, Dean's Day, Graduate School of Public Health. University of Pittsburgh.
2008	Adam C. Straub	Rosenkranz Award for Public Health Significance of Research, Dean's Day, Graduate School of Public Health. University of Pittsburgh.
2008	Antonia A. Nemec	Keleti Award for Excellence in Environmental Health. Dean's Day, Graduate School of Public Health. University of Pittsburgh.
2008	Adam C. Straub	First Place, Society of Toxicology Metals Specialty Section Student Award.
2008	Antonia A. Nemec	Third Place, Society of Toxicology Metals Specialty Section Student Award.
2009	Antonia A. Nemec	Third Place, Society of Toxicology Metals Specialty Section Student Award.
2009	Antonia A. Nemec	Best Research Presentation, Allegheny & Erie Regional Chapter of the Society of Toxicology.

e. Service on Comprehensive Examination Committees (OPTIONAL)

Dates Served	Student Population	Type of Exam/ Number of Questions
June 11, 2004	1 student Infectious Diseases and Microbiology	Ph.D. Preliminary examination
June 30, 2006	1 student, Molecular Toxicology	Ph.D. Preliminary examination
November 16, 2006	1 student, Environmental and Occupational Health	Ph.D. Preliminary examination

f. Supervision of Post-Doctoral Students, Residents, and Fellows

1997-2000 Karol R. Smith, Ph.D., Mechanisms of arsenite-induced signaling in endothelial cells. Present position: Clinical Nutritionist.

2003- 2004 Rasilaben J. Vaghjiani, visiting Pre-doctoral Fellow. Present position: Graduate Student, Imperial College, London.

g. Other Teaching and Training

Dartmouth College Undergraduate Training

Undergraduate Students

Eric W. Springer, 1993, Honors Thesis, Biology: "The effects of antioxidants on protein phosphorylation and transacting factor activation in vascular endothelial cells." Present Position: M.D.

Leigh C. Elmore, 1996, Senior Thesis, Chemistry: "Endothelial cell gene expression as a result of arsenite exposure". Present Position: M.D.

Benjamin M. Lannon, 1996, Senior Research, Biology, "Development of reverse transcriptase polymerase chain reaction to quantify the effects of toxins on endothelial cell urokinase-type plasminogen activator receptor." Present position: MD

Amy L. Ulfers, 1998, Honors Thesis, Chemistry, "The effect of chronic arsenic exposure on reactive oxygen, formation and gene expression in endothelial cells." Present Position: Graduate student, Department of Pharmacology at Brown.

Ryan J. Broderick, 1998, Honors Thesis, Chemistry, "The role of NF- κ B in chrysotile-induced interleukin-8 expression in epithelial cells." Present Position: MD

Brian C. Richardson, 2001, Honors Thesis, Chemistry, "The effects of arsenic on nitric oxide production in vascular endothelial cells." Present Position: Graduate Student, Department of Biology, Princeton University.

Caitlin Biedron, 2002, Center for Environmental Health Sciences Research Fellowship, "Chromium(VI)-induced signaling complexes may lead to tissue inhibitor of metalloproteinase-1 (TIMP-1) activation."

University of Pittsburgh Undergraduate Training

Harina Vin, 2006, Summer research intern, "Arsenic regulation of liver stellate cell activation." Present position, undergraduate

Sarabeth A. Sandel, Summer undergraduate research intern 2007, “Chromium regulation of nickel-induced metallothionein in lung epithelial cells.” Present position, undergraduate, Grove City University.

Lindsey Zubritsky 2008 Environmental Health Sciences summer internship. Role of dicysteine containing motif in chromium VI activation of tyrosine kinase activity. Present Position: undergraduate student at Washington and Jefferson University.

2. Research and Training

a. Grants and Contracts Received

Principal Investigator

Years	Grant number and title	Source	Annual direct costs	Effort
7/08-6/09	3R01ES013781-01S1 Mechanisms for arsenic induced vascular disease: minority supplement.	NIEHS	\$45,000	0%
12/07-12/12	R01 ES013781-01 Mechanisms for arsenic induced vascular disease.	NIEHS	\$225,000	40%
8/01-7/07	R01 ES10638-01 Regulation of transcriptional competence by chromium.	NIEHS	\$200,000	40%
4/95 - 3/05	P42 ES07373-07 Toxic Metals in the Northeast Project 1: Mechanisms for arsenic-induced vascular disease.	NIEHS	\$157,000	40%
8/96 -7/99	R01 HL52738-01: Molecular mechanisms for endothelial cell activation in response to asbestos.	NHLBI	\$100,000	60%
7/92 - 6/95	Council for Tobacco Research: Mechanism for oxidant-induced cell-cell interactions.	CTR	\$45,000	10%
1/91-12/94	R01 HL44454: Endothelial cell biology following oxidative stress	NHLBI	\$71,000	50%
1992-1995	Investigations of the effects of anticholinesterase agents in relief of Alzheimer's disease	Marion Merrell Dow, Inc	\$33,000	5%
1989-1991	Endothelial cell biology following oxidative stress	PhMAF	\$50,000	5%

B. Invited Lectures and Major Seminars Related to Research (last 5 years):

March 2003: 42nd Annual Meeting of the Society of Toxicology. Symposium on Molecular Mechanisms of Cardiovascular Toxicity of Metals and Metalloids. “Signaling pathways involved in arsenic-induced vascular disease.” Salt Lake City, UT.

April 2003: Brown University, Department of Pathology and Pathobiology; “Low dose chromium selectively activates signaling pathways in pulmonary cells.” Providence, RI.

November 2003: American Heart Association Scientific Sessions 2003 Special Program on Pollution and Heart Disease: the Emerging Science of Environmental Cardiology. “Metal Toxicity and Heart Disease.” Orlando, FL.

January, 2004: Duquesne University, Department of Biology; “Arsenic-Induced Vascular Disease: *Search for molecular mechanisms of environmental contaminant action.*” Pittsburgh, PA.

March, 2004: University of Pittsburgh, Department of Pharmacology; “Arsenic-Induced Vascular Disease: *Search for molecular mechanisms of environmental contaminant action.*” Pittsburgh, PA.

October 2004: Magee Women’s Research Institute; “Mechanisms for vascular changes caused by environmental arsenic exposures.” Pittsburgh, PA.

October, 2004: Laboratory of Comparative Carcinogenesis NCI-Frederick; “Mechanisms for arsenic-induced vascular changes: implications in angiogenesis and tumorigenesis.” Frederick, MD.

May 2005: Allegheny-Erie Society of Toxicology Spring meeting; “Chromium Signaling in the lung: a case of stolen transcription.” Pittsburgh, PA.

August 2005: Workshop on Chromium and Human Health; “Chromium Signaling in the lung: a case of stolen transcription.” Portland, ME.

September 2005: Duke University Integrated Toxicology Program; “Chromium Signaling in the lung: a case of stolen transcription.” Durham, NC.

October 2005: National Institute of Environmental Health Sciences/US Environmental Protection Agency meeting on Mechanisms of Action of Inhaled Fibers, Particles, and Nanoparticles in Lung and Cardiovascular Disease; “Regulation of transcriptional activation programs in human airway epithelial cells exposed to metal mixtures.” Research Triangle Park, NC.

January 2006: Nanotox 2006 Biomedical Aspects. “Transcriptional activation and silencing in response to metals mixtures.” Miami, FL.

March 2006: Society of Toxicology symposium on Metals and MAP Kinases. “JNK activation by chromium in the lung.” San Diego, CA

May 2006: US Environmental Protection Agency Workshop on Research and Risk Assessment for Arsenic. “Arsenic and function of vascular cells.” Sheperdstown, WV.

September 2006: American Chemical Society symposium on Metal Carcinogenesis-New Concepts. "Transcriptional activation and silencing in response to chromium." San Francisco, CA.

September 2006: 4th Conference on Metal Toxicity and Carcinogenesis, National Institute of Occupational Safety and Health. "Arsenic stimulates sinusoidal endothelial cell capillarization and vessel remodeling in mouse liver." Morgantown, WV.

February 2007: PittCon 2007 symposium on Arsenic: Transformation, Speciation, and Toxicity. "Low level arsenic promotes progressive inflammatory angiogenesis and liver blood vessel remodeling in mice." Chicago, IL.

March 2007: Society of Toxicology symposium on The Vascular Endothelium as a Target of Metal Toxicity. "Arsenic-induced endothelial cell activation and vascular remodeling." Charlotte, NC.

October 2007: National Institutes of Environmental Health Sciences, Laboratory of Pharmacology and Chemistry. "Arsenic-stimulated angiogenesis and vascular remodeling: Receptor-mediated events?" Research Triangle Park, NC.

December 2007: Columbia University. "Arsenic-stimulated angiogenesis and vascular remodeling: Receptor-mediated events?" New York, NY.

March 2008: Society of Toxicology symposium on Cardiovascular Effects of Arsenic. "Signaling mechanisms for vascular responses to arsenic." Seattle, WA.

May 2008: University of Washington, School of Public Health, Department of Environmental and Occupational Health Sciences, "Arsenic-stimulated angiogenesis and vascular remodeling: Receptor-mediated events?" Seattle, WA.

October 2008: University of West Virginia, Mary Babb Randolph Cancer Center, "Sphingosine-1-phosphate type 1 receptors are required for arsenic-stimulated of vascular remodeling," Morgantown, WV.

May 2009: Kent State Univeristy, East Liverpool. Cardiovascular Disease from Arsenic in Drinking Water: Studies from Mice to Men, East Liverpool, OH.

PUBLICATIONS

1. Refereed Articles

1. Routledge PA, A **Barchowsky**, TD Bjornsson, BB Kitchell and DG Shand. Lidocaine plasma protein binding. *Clin Pharm Ther* 27:347-351, 1980.
2. Routledge PA, DG Shand, A **Barchowsky**, GS Wagner and WW Stargel. The relationship between α_1 -acid glycoprotein and altered lidocaine disposition in patients with myocardial infarction. *Clin Pharm Ther* 30:154-157, 1981.

3. Routledge PA, WW Stargel, BB Kitchell, A **Barchowsky**, and DG Shand. Sex related differences in the plasma binding of lignocaine and diazepam. *Brit J Clin Pharm* 11:245-250, 1981.
4. Routledge PA, WW Stargel, AL Finn, A **Barchowsky** and DG Shand. Lignocaine disposition in blood in epilepsy. *Br J Pharmacol* 12:663-666, 1981.
5. Shand DG, C Verghese, A **Barchowsky**, SC Hammill and ELC Pritchett. High performance liquid chromatographic analysis of a new anti-arrhythmic drug, pirmenol, in biological fluids. *J Chromatog Biomed Appl* 224:343-347, 1981.
6. Stargel WW, DG Shand, PA Routledge, A **Barchowsky** and GS Wagner. Clinical comparison of rapid infusion and multiple injection methods for lidocaine loading. *Am Heart J* 102:872-876, 1981.
7. Whorton AR, SL Young, JL Data, A **Barchowsky** and RS Kent. Mechanism of bradykinin-stimulated prostacyclin synthesis in porcine aortic endothelial cells. *Biochim Biophys Acta* 712:79-87, 1982.
8. **Barchowsky** A, DG Shand, WW Stargel, GS Wagner and PA Routledge. On the role of α_1 -acid glycoprotein in lignocaine accumulation following myocardial infarction. *Brit J Clin Pharm* 13:411-415, 1982.
9. **Barchowsky** A, WW Stargel, DG Shand and PA Routledge. Saliva concentrations of lidocaine and its metabolites in man. *Ther Drug Monit* 4:335-339, 1982.
10. Handel F, FA Luzzi, TL Wenger, A **Barchowsky**, DG Shand and HC Strauss. Lidocaine and its metabolites in canine plasma and myocardium. *Cardiovasc Pharmacol* 5:44-50, 1983.
11. **Barchowsky** A, JL Data and AR Whorton. Effects of prostaglandin synthesis inhibition on direct stimulation of renin release from rabbit renal cortical slices. *Prostaglandins* 27:51-68, 1984.
12. Luzzi FA, TL Wenger, JK Klinger, A **Barchowsky** and HC Straus. Simultaneous determinations of lidocaine and its metabolites in plasma and myocardium. *J Chromatog* 311:291-299, 1984
13. Routledge PA, LD Lazar, A **Barchowsky**, WW Stargel, GS Wagner and DG Shand. A free lignocaine index as a guide to unbound drug concentrations. *Br J Clin Pharmacol* 20:695-698, 1985.
14. **Barchowsky** A, RS Kent and AR Whorton. Recovery of porcine aortic endothelial cell prostaglandin synthesis following inhibition by sublethal concentrations of hydrogen peroxide. *Biochim Biophys Acta* 927:372-381, 1987.
15. **Barchowsky** A, JL Data and AR Whorton. Inhibition of renin release by analogs of adenosine in rabbit renal cortical slices. *Hypertension* 9:619-625, 1987.
16. **Barchowsky** A, K Tabrizi, RS Kent and AR Whorton. Inhibition of prostaglandin synthesis following metabolism of menadione by endothelial cells. *J Clin Invest* 83:1153-1159, 1989.
17. Routledge PA, Stargel WW, **Barchowsky** A, Wagner GS, Shand DG. Factors affecting free (unbound) lignocaine concentration in suspected acute myocardial infarction. *Br. J. Clin Pharm* 28:593-597, 1989.
18. Buckley BJ, A **Barchowsky**, RJ Dolor, and AR Whorton. Regulation of arachidonic acid release in vascular endothelium: calcium-dependent and independent pathways. *Biochem J* 280:281-287, 1991.
19. Benz CC, SB Iyer, H Asagari, SA Martin, FR Aronson, and A **Barchowsky**. Gossypol effects on endothelial cells and tumor blood flow. *Life Sciences* 49:PL67-PL72, 1991.

20. Goldberg MR, W Tanaka, A **Barchowsky**, TE Bradstreet, J McCrea, MW Lo, EJ McWilliams, and TD Bjornsson. Losartan, a non-peptide angiotensin antagonist: effects on blood pressure, PRA and angiotensin II levels. *Hypertension* 21:704-713, 1993.
21. **Barchowsky** A, ME Williams, CC Benz, KP Chepenik. Oxidant-sensitive protein phosphorylation in endothelial cells. *Free Rad Biol Med* 16:771-777, 1994.
22. Rochelle LG, H Kruszyna, R Kruszyna, A **Barchowsky**, DE Wilcox, and RP Smith. Bioactivation of nitroprusside by porcine endothelial cells. *Toxicol Appl Pharmacol* 128:123-128, 1994.
23. Sramek, JJ., GA Block, SA Reims, SF Sawin, A **Barchowsky**, and NR Cutler. A multiple-dose safety trial of heptastigmine in Alzheimer's disease, with pharmacodynamic observations of red blood cell cholinesterase. *Life Sciences* 56:319-326, 1995.
24. Janssen, YMW, A **Barchowsky**, MD Treadwell, KE Driscoll, and BT Mossman. Asbestos induces NF- κ B DNA binding activity and NF- κ B dependent gene expression in tracheal epithelial cells. *Proc Nat Acad Sci* 92:8458-8462, 1995.
25. Cutler, NR, RD Seifert, MM Schleman, JJ Sramek, OJ Szyllayko, DR Howard, A **Barchowsky**, TS Wardle, EP Brass. Acetylcholinesterase inhibition by zifosilone: pharmacokinetics and pharmacodynamics. *Clin Pharm Ther* 58:54-61, 1995.
26. **Barchowsky**, A, SR Munro, SJ Morana, MP Vincenti, and MD Treadwell. Oxidant-sensitive and phosphorylation-dependent activation of NF- κ B and AP-1 in endothelial cells. *Am J Physiol* 269:L829-L836, 1995.
27. Vincenti, MP, CI Coon, LA White, A **Barchowsky**, and CE Brinckerhoff. Src-related tyrosine kinases regulate transcriptional activation of the interstitial collagenase gene, MMP-1, in interleukin-1-stimulated synovial fibroblasts. *Arthritis and Rheumatism* 39(4):574-582, 1996.
28. Treadwell, MD, BT Mossman, and A **Barchowsky**. Induction of neutrophil adherence to endothelial cells following exposure to chrysotile asbestos. *Toxicol Appl Pharmacol* 139:62-70, 1996.
29. **Barchowsky**, A, EJ Dudek, MD Treadwell, and KE Wetterhahn. Arsenic induces oxidant stress and NF- κ B activation in cultured aortic endothelial cells. *Free Radic Biol Med* 21:783-790, 1996.
30. Janssen, YMW, KE Driscoll, B Howard, TR Quinlan, MD Treadwell, A **Barchowsky**, and BT Mossman. Asbestos causes translocation of p65 protein and NF- κ B DNA binding in rat lung epithelial and pleural mesothelial cells. *Am J Pathol* 151:389-401, 1997.
31. **Barchowsky**, A, BM Lannon, LC Elmore, and MD Treadwell. Increased focal adhesion kinase- and urokinase-type plasminogen activator receptor-associated cell signaling in endothelial cells exposed to asbestos. *Environ Health Perspect* Volume 105, Supp 5, pp. 1131-1137, 1997.
32. Mossman, BT, S. Faux, Y Janssen, LA Jimenez, C Timblin, C Zanella, J Goldberg, E Walsh, A **Barchowsky**, and K Driscoll. Cell Signaling pathways elicited by asbestos. *Environ Health Perspect* Volume 105, Supp 5, pp. 1121-1125, 1997.
33. Shumilla, JA, KE Wetterhahn, and A **Barchowsky**. Inhibition of NF- κ B DNA binding by chromium, cadmium, mercury, zinc, and arsenite in vitro: evidence of a thiol-dependent mechanism *Arch. Biochem. Biophys.* 349:356-362, 1998.
34. Suh, N, T Honda, HJ Finlay, A **Barchowsky**, C. Williams, NE Benoit, Q Xie, GW Gribble, and MB Sporn. Novel tritepenoids suppress inducible nitric oxide synthase (iNOS) and inducible cyclooxygenase (COX-2) in mouse macrophages. *Cancer Res*, 58:717-723, 1998.

35. **Barchowsky, A, RR Roussel, RJ Krieser, BT Mossman, MD Treadwell.** Expression and activity of urokinase and its receptor in endothelial and pulmonary epithelial cells exposed to asbestos. *Toxicol Appl Pharmacol* 152:388-396,1998.
36. Shumilla, JA and **A Barchowsky.** Inhibition of protein synthesis and by chromium(VI) differentially affects expression of urokinase and its receptor in human type II pneumocytes. *Toxicol Appl Pharmacol* 158:288-295, 1999.
37. **Barchowsky, A, RR Roussel, LR Klei, PE James, N Ganju, KR Smith, and EJ Dudek.** Low levels of arsenic trioxide stimulate proliferative signals in primary vascular cells without activating stress effector pathways. *Toxicol Appl Pharmacol* 159:65-75, 1999.
38. Chen, CY, KB Sillett, CI Folt, SL Whittmore, and **A Barchowsky.** Molecular and demographic measures of arsenic stress in *Daphnia pulex*. *Hydrobiologia* 401: 229-238, 1999.
39. Shumilla, JA, RJ Broderick, Y Wang, and **A Barchowsky.** Chromium(VI) inhibits the transcriptional activity of Nuclear Factor- κ B by decreasing the interaction of p65 with cAMP-responsive element-binding protein-binding protein. *J Biol Chem.* 274:36207-36212, 1999.
40. **Barchowsky, A, LR Klei, EJ Dudek, HM Swartz, and PE James.** Stimulation of reactive oxygen, but not reactive nitrogen species, in vascular endothelial cells exposed to low levels of arsenic trioxide. *Free Radic Biol Med.* 27:1405-1412, 1999.
41. Greenberg, HE, P Wissel, J Barrett, **A Barchowsky, R Gould, D Farrell, D Panebianco, E Hand, L Gillen, M Goldberg, and TD Bjornsson.** Antiplatelet effects of MK-852, a platelet fibrinogen receptor antagonist, in healthy volunteers. *J Clin Pharmacol* 40: 496-507, 2000.
42. Mengshol, JA, MP Vincenti, CI Coon, **A Barchowsky, and CE Brinckerhoff.** IL-1 induction of collagenase-3 (MMP-13) gene expression requires p38, JNK, and NF- κ B in chondrocytes. *Arthritis & Rheumatism* 43: 801-811, 2000.
43. Roussel, RR and **A Barchowsky.** Arsenic inhibits NF- κ B-mediated gene transcription by blocking I κ B kinase activity and I κ B α phosphorylation and degradation. *Arch Biochem Biophys* 377:204-212, 2000.
44. Andrew, AS and **A Barchowsky.** Nickel-induced plasminogen activator inhibitor-1 expression inhibits the fibrinolytic activity of human airway epithelial cells. *Toxicol Appl Pharmacol*, 168:50-57, 2000.
45. **Barchowsky, A, D Frleta, and MP Vincenti.** Integration of the NF- κ B and mitogen-activated protein kinase/AP-1 pathways at the collagenase-1 promoter: divergence of IL-1 and TNF-dependent signal transduction in rabbit primary synovial fibroblasts. *Cytokine* 12:1469-1479, 2000.
46. Smith, KR, LR Klei, and **A Barchowsky.** Arsenite stimulates plasma membrane NADPH oxidase activity in vascular endothelial cells. *Am J Physiol*, 280:L442-L449, 2001.
47. Stommel, EW, E Cho, JA Steide, R Seguin, **A Barchowsky, JD Schwartzman, and Kasper LH.** Identification and role of thiols in *Toxoplasma gondii* egress. *Exp Biol Med* 2001 226:229-236, 2001.
48. Andrew, AS, LR Klei, and **A Barchowsky.** Nickel requires hypoxia inducible factor-1 α , not redox signaling to induce plasminogen activator inhibitor-1. *Am J Physiol* 281:L607-L615, 2001.
49. Andrew, AS, LR Klei, and **A Barchowsky.** AP-1-dependent induction of plasminogen activator inhibitor-1 by nickel does not require reactive oxygen. *Am J Physiol* 281:L607-L615, 2001.

50. **Barchowsky, A**, NA Soucy, TL Noreault, KA O'Hara, J Hwa, and AS Andrew. A Novel pathway for nickel-induced interleukin-8 expression. *J. Biol. Chem.* 277:24225-24231, 2002.
51. Madhani, M, **A Barchowsky**, LR Klei, CR Ross, SK Jackson, HM Swartz, and PE James. Antibacterial peptide PR-39 affects local nitric oxide and preserves tissue oxygenation in the liver during septic shock. *Biochim. Biophys. Acta* 1588: 232-240, 2002.
52. Andrew, AS, AJ Warren, **A Barchowsky**, KA Temple, LR Klei, NV Soucy, KA O'Hara, JW Hamilton. Genomic and proteomic profiling of toxic metal responses. *Environ. Health Perspect.* 111: 825-835, 2003.
53. O'Hara, KO, LR Klei, and **A. Barchowsky**. Selective activation of Src family kinases and JNK by low levels of chromium(VI). *Toxicol Appl Pharmacol*, 190: 214-223, 2003.
54. James PE, M Madhani, C Ross, L Klei, **A Barchowsky**, HM Swartz. Tissue hypoxia during bacterial sepsis is attenuated by PR-39, an antibacterial peptide. *Adv Exp Med Biol.* 530:645-52, 2003.
55. Soucy, NS, MA Ihnat, L Hess, DK Chandrashekhar, LR Klei, C Clark, M Post, and **A Barchowsky**. Arsenic stimulates angiogenesis and tumorigenesis *in vivo*. *Toxicol Sci*, 76:271-279, 2003.
56. Soucy, NS, LR Klei, DD Mayka, and **A Barchowsky**. Signaling Pathways for Arsenic-Stimulated Vascular Endothelial Growth Factor-A Expression in Primary Vascular Smooth Muscle Cells. *Chem Res Toxicol.* 17:555-563, 2004.
57. Gao F, **A Barchowsky**, AA Nemec, and JP Fabisiak. Microbial stimulation by mycoplasma fermentans synergistically amplifies IL-6 release by human lung fibroblasts in response to residual oil fly ash (ROFA) and nickel. *Toxicol Sci* 81:476-479, 2004.
58. Shenberger JS, JL Myers, SG Zimmer, RJ Powell, and **A Barchowsky**. Hyperoxia alters the expression and phosphorylation of multiple factors regulating translation initiation. *Am J Physiol Lung Cell Mol Physiol.* 288:L442-L449, 2005.
59. Soucy, NV, DD Mayka, LR Klei, AA Nemec, JA Bauer, and **A Barchowsky**. Neovascularization and angiogenic gene expression following chronic arsenic exposure in mice. *Cardiovasc Toxicol* 5 29-41, 2005.
60. O'Hara, KO, AA Nemec, J Alam, LR Klei, BT Mossman, and **A Barchowsky**. Chromium(VI) inhibits heme oxygenase-1 expression *in vivo* and in arsenic-exposed human airway epithelial cells. *J. Cell. Physiol.* 209:113-121, 2006
61. Straub, AC, DB Stolz, MA Ross, A Hernandez, NV Soucy, LR Klei, and **A Barchowsky**. Arsenic stimulates sinusoidal endothelial cell capillarization and vessel remodeling in mouse liver. *Hepatology* 45:205-212, 2007.
62. O'Hara, KO, RJ Vaghjiani, AA Nemec, LR Klei, and **A Barchowsky**. Chromium(VI)-stimulated STAT3 tyrosine phosphorylation and nuclear translocation in human airway epithelial cells requires Lck. *Biochem J.* 402:261-269, 2007.
63. Straub, AC, DB Stolz, H. Vin, MA Ross, NV Soucy, LR Klei, and **A Barchowsky**. Low level arsenic promotes progressive inflammatory angiogenesis and liver blood vessel remodeling in mice. *Toxicol. Appl. Pharmacol.* 222:327-336, 2007.
64. Shenberger JS, L Zhang, RJ Powell, and **A Barchowsky**. Hyperoxia enhances VEGF release from A549 cells via post-transcriptional processes. *Free Radic Biol Med.* 43:844-852, 2007.
65. Zhao, J, RW Harper, **A Barchowsky**, YP Di. Identification of multiple MAPK-mediated transcription factors regulated by tobacco smoke in airway epithelial cells. *Am J Physiol.* 293:L480-1490, 2007.

66. Shvedova AA, JP Fabisiak, ER Kisin, AR Murray, JR Roberts, YY Tyurina, JM Antonini, WH Feng, C Kommineni, J Reynolds, **A Barchowsky**, V Castranova, and VE Kagan. Sequential exposure to carbon nanotubes and bacteria enhances pulmonary inflammation and infectivity. *Am J Respir Cell Mol Biol.* 38: 579-90, 2008.
67. Klei LR and **A Barchowsky**. Positive signaling interactions between arsenic and ethanol for angiogenic gene induction in human microvascular endothelial cells. *Toxicol Sci* 102:319-227, 2008.
68. Basu P, RN Ghosh, LE Grove, LR Klei, and **A Barchowsky**. Angiogenic potential of 3-Nitro-4-Hydroxy benzene arsenic acid (roxarsone). *Environ Health Perspect* 116:520-523, 2008.
69. Dougherty D, S Garte, **A Barchowsky**, J Zmuda, and E Taioli. NQO1, MPO, CYP2E1, GSTT1 and GSTM1 polymorphisms and biological effects of benzene exposure-A literature review. *Toxicol Lett.* 182:7-17, 2008.
70. Straub AC, KA Clark, MA Ross, AG Chandra, S Li, X Gao, PJ Pagano, DB Stolz, and **A Barchowsky**. Arsenic-stimulated liver sinusoidal capillarization in mice requires NADPH oxidase-generated superoxide. *J. Clin. Invest.* 118:3980-9, 2008.
71. Nemeč AA, GD Leikauf, BR Pitt, KJ Wasserloos, and **A Barchowsky**. Nickel mobilizes intracellular zinc to induce metallothionein in human airway epithelial cells. *Am J Respir Cell Mol Biol* 41(1):69-75, 2009.
72. Bein K, SC Wesselkamper, X Liu, M Dietsch, N Majumder, VJ Concel, Medvedovic M, Sartor M, Henning LN, Venditto C, Borchers MT, **Barchowsky A**, Weaver TE, Tichelaar JW, Prows DR, Korfhagen TR, Hardie WD, Bachurski CJ, Leikauf GD. Surfactant Associated Protein B is Critical to Survival in Nickel-induced Injury in Mice. *Am J Respir Cell Mol Biol In Press* Jan 8, 2009.
73. Straub AC, LR Klei, DB Stolz, **A Barchowsky**. Arsenic requires sphingosine-1-phosphate type 1 receptors to induce angiogenic genes and endothelial cell remodeling. *Am J Pathol* 174:1949-1958, 2009.
74. Nemeč AA and **A Barchowsky**. Signal transducer and activator of transcription 1 (STAT1) is essential for chromium silencing of gene induction in human airway epithelial cells. *Toxicol. Sci.* 110:212-223, 2009.
75. Liu F, **A Barchowsky**, and PL Opresko. The Werner Syndrome Protein Functions in Repair of Cr (VI)-induced Replication Associated DNA Damage. *Toxicol. Sci. In Press*, 2009 [epub June 1, 2009].

3. Invited Reviews

1. **Barchowsky, A** and KA O'Hara. Metal-induced cell signaling and gene activation in lung diseases. *Free Radic Biol Med.* 34:1130-5, 2003.
2. Prozialeck, WC, JR Edwards, DW Nebert, JM Woods, **A Barchowsky**, and WD Atchison. The Vascular System as a Target of Metal Toxicity. *Toxicol Sci* 102:207-218, 2008.
3. States, JC, S Srivastava, Y Chen, **A Barchowsky**. Arsenic and Cardiovascular Disease. *Toxicol Sci.* 107:312-323, 2009.

6. Published Abstracts

(past 5 years)

1. **Barchowsky, A**, LR Klei, DD Mayka, JC Davey, JW Hamilton and NV Soucy. Chronic arsenic exposure enhances FGF-2 stimulated angiogenesis in vivo and tissue expression of angiogenic genes. *The Toxicologist* 78 (S-1):170, 2004.
2. O'Hara, KA, LR Klei, RJ Vaghjiani and **A Barchowsky**. Selective signaling pathways for Chromium(VI) induced patterns of transcription factor binding in exposed airway epithelial cells. *The Toxicologist* 78 (S-1):239, 2004.
3. O'Hara, KA, AA Nemec, J Alam, LR Klei, BT Mossman, and **A Barchowsky**. Chromium (VI) inhibits heme oxygenase-1 induction in both cell and in vivo models. *Free Radic Biol Med.* 37:S69, 2004. (Young Investigator Award).
4. Klei, LR, N. Soucy, and **A Barchowsky**. Differential oxidant-sensitive or -repressed vascular gene induction pathways stimulated by arsenic. *Free Radic Biol Med.* 37:S66, 2004.
5. Klei LR, MA Ihnat, NV. Soucy, AA Nemec, **A Barchowsky**. Differential effects of chronic low level arsenic exposures on transcription factor binding. *The Toxicologist* 84 (S-1):238, 2005
6. O'Hara, KA, RJ Vaghjiani, A A Nemec, LR Klei, **A Barchowsky**. Chromium(VI)-stimulated STAT3 tyrosine phosphorylation and nuclear translocation in human airway epithelial cells requires Lck. *The Toxicologist* 84 (S-1):232, 2005.
7. Straub, AC, LR. Klei, NV Soucy, DB Stolz, **A Barchowsky**. Arsenic Stimulates Pro-Angiogenic Gene Expression and Changes in Vascular Architecture in the Liver. *The Toxicologist* 90 (S-1):91, 2006.
8. **Barchowsky A**. JNK activation by chromium in the lung. *The Toxicologist* 90 (S-1):309, 2006.
9. Nemec, A A, KA O'Hara, LR Klei, RJ Vaghjiani, **A Barchowsky**. Chromium(VI) requires histone deacetylase to induce interferon-stimulated genes. *The Toxicologist* 90 (S-1):309, 2006.
10. Nemec, A, A, KA O'Hara, LR Klei, RJ Vaghjiani, **A Barchowsky**. Chromium(VI) induces genes through STAT1 transactivation of interferon-stimulated response elements. *The Toxicologist* 96:224, 2007.
11. Barchowsky, A., A.C. Straub, DB Stolz. Arsenic-induced endothelial cell activation and vascular remodeling. *The Toxicologist* 96:262, 2007.
12. Straub, AC, DB Stolz, MA Ross, LR. Klei, **A Barchowsky**. Arsenic stimulates hepatic capillarization and increases sinusoidal endothelial membrane bound Rac1-GTPase in vivo and ex vivo. *The Toxicologist* 96:306, 2007.
13. Klei, LR and **A Barchowsky**. Synergies in vascular cell signaling stimulated by co-exposure to arsenic and ethanol. *The Toxicologist* 96:306, 2007.
14. Murray, AR, E Kisin, JP Fabisiak, JR Roberts, JM Antonini, C Kommineni, J Reynolds, **A Barchowsky**, V Castranova, V Kagan, and AA Shvedova. Combined exposure to carbon nanotubes and bacteria enhances pulmonary inflammation and infectivity. *The Toxicologist* 102:306, 2008.
15. Nemec, A A, SA Sandel, GD Leikauf, BR Pitt, and **A Barchowsky**. Nickel induces metallothionein in airway epithelial cells by increasing intracellular zinc. *The Toxicologist* 102:330, 2008.
16. Straub, AC, DB Stolz, KA Clark, AG Chandura, and **A Barchowsky**. Arsenic signals through NADPH oxidase to promote mouse liver sinusoidal endothelial cell defenestration and increased PECAM-1 expression. *The Toxicologist* 102:333, 2008.

17. **Barchowsky, A**, LR Klei, AC Straub, and D B Stolz. Signaling mechanisms for vascular responses to arsenic. *The Toxicologist* 102:405, 2008.
18. Klei, LR and **A Barchowsky**. Arsenic signals through a G α i-coupled pathway to induce angiogenic genes in human microvascular cells. *The Toxicologist* 102:456, 2008.
19. Nemec, AA and **A Barchowsky** Chromium silences nickel-induced vascular endothelial growth factor (VEGF) expression in human airway epithelial cells *FASEB J.* 22:764.3, 2008.
20. Straub, AC, DB Stolz, KA Clark, and **A Barchowsky**. Arsenic signals through g-proteins and NADPH Oxidase (NOX) to promote mouse liver sinusoidal endothelial cell capillarization. *FASEB J.* 22:900.4, 2008.
21. Klei, LR, AC Straub, DB Stolz, and **A Barchowsky**. Arsenic requires sphingosine-1-phosphate type 1 receptors to stimulate vascular remodeling. *The Toxicologist* 108: 43, 2009.
22. Liu, F, **A Barchowsky**, and PL Opresko. The Werner syndrome protein functions in repair of Cr(VI)-induced stalled DNA replication forks. *The Toxicologist* 108: 220, 2009.
23. Mann, KK, AM Padovani, WH Miller, AC Straub, and **A Barchowsky**. Low dose arsenic potentiates a pro-atherogenic phenotype in macrophages and liver. *The Toxicologist* 108: 370, 2009.
24. Nemec, A A and **A Barchowsky**. STAT1 is essential for chromium silencing of nickel-induced VEGF expression in human airway epithelial cells. *The Toxicologist* 108:370, 2009.
25. **Barchowsky, A**, LR Klei, AC Straub, DB Stolz. Arsenic requires sphingosine-1-phosphate type 1 receptors to induce angiogenic genes and endothelial cell remodeling. *FASEB J.* 23:116.10, 2009.

3. Service (Professionally Related)

a. University/Institute of Higher Learning

University of Pittsburgh

Years	Committee	Position
2004-2006	GSPH Reaccreditation Committee	appointed
2004-	GSPH Core Curriculum Committee	appointed
2004	GSPH Molecular Biology Retreat Planning Group	appointed
2003-	EOH Promotions and Appointments Committee	appointed
2005-	EOH Search Committee for Research Faculty	appointed
2007-	Director, Environmental Health Sciences Training Program	appointed

Dartmouth Medical School

Years	Committee	Position
2002-2003	Director, Medical Pharmacology Course	appointed
2002-2003	Committee for Student Performance and Conduct	appointed
1999-2002	University Radiation Safety Committee Chair	elected
1997-2000	Grant Review Committee for Computer Technology Venture Fund	appointed
1996-2000	University Radiation Safety Committee	appointed
1994-2003	Medical Pharmacology Course Committee	appointed

Years	Committee	Position
1993-1995	New Directions, Year II Curriculum Committee	appointed
1993	Clinical Pharmacology Faculty Search Committee	appointed
1992-1996, 2000-2003	M.D./Ph.D. Program Committee	appointed
1992-1995, 1998-2003	Graduate Program Committee	appointed

Other

Years	Committee	Position
2002-	External Advisory Committee, University of Montana Center for Environmental Health	appointed
2005-	Chair, External Advisory Committee, University of Montana Center for Environmental Health	elected

b. Editorial Boards, Editorships

Date	Position	Organization
2003-	Associate Editor	Cardiovascular Toxicology
2003-	Associate Editor	Journal of Cellular Physiology
2007-	Associate Managing Editor	Toxicological Sciences

c. Manuscript and Other Document/Publication Review

Dates	Journal Title
Continual since 1988	American Journal of Physiology, Lung Cellular and Molecular Physiology Arteriosclerosis, Thrombosis and Vascular Biology Cancer Research Chemical Research in Toxicology Free Radical Biology and Medicine Molecular and Cellular Biochemistry Journal of Experimental Pharmacology and Therapeutics Toxicology and Applied Pharmacology. Toxicological Sciences

d. Study Sections, Review Panels, and Related Advisory Boards

Date	Position	Organization and Nature of Activity
2009	member	Outstanding New Environmental Scientists special emphasis panel, NIEHS
2009	member	NIEHS Outstanding New Environmental Scientists special emphasis panel
2008-	member	NIH special emphasis panel: Systemic Injury from Environmental Exposures.

Date	Position	Organization and Nature of Activity
2007	member	NIEHS Special emphasis panel: Manufactured nanomaterials: Physico-chemical principles of biocompatibility.
2006	Ad-hoc member	NIH Erythrocyte and Leukocyte Biology Study section
2004-2006	Permanent member	NIH Vascular Cell and Molecular Biology (VCMB) study section
2005	Ad-Hoc member	NIH special emphasis toxicology review panel
2005	reviewer	Health Effects Institute
2002-2003	Permanent member	NIH, Alcohol and Toxicology -1 (ALTX-1) study section
2001	member	NIEHS Special Emphasis Panel: Mechanisms of Oxidative Stress
2001	member	NIEHS Special Emphasis Panel: ARCH Programs
2001	member	NHLBI Special Emphasis Panel: SCORs in Lung Fibrosis
1999-2002	member	NIH, SSS-3 SBIR Special Study Section
1999, 2001, 2002	ad hoc member	NIH, Alcohol and Toxicology-1 (ALTX-1),
1998	ad hoc member	NIH, Lung Biology and Pathology Study Section

e. Leadership in Professional Organizations and Honorary Societies.

Date	Position	Organization
2005 -	Vice President	Allegheny-Erie Chapter Society of Toxicology
2007-	Education Committee (chair)	Society of Toxicology

f. Service to Governmental and Other Public Organizations

Date	Position	Organization and Nature of Activity
2006-	Member	Advisory Board, University of Pittsburgh Academic Consortium for Excellence in Environmental Public Health Tracking (UPACE-EHPT)
2005-	Member	US Environmental Protection Agency Scientific Advisory Board Arsenic Special Emphasis Panel
2002	Member	National Academies of Science, Committee on the framework for evaluating the safety of dietary supplements; Chromium Picolinate I Working Group.
1996-2003	Member	American Heart Association, Northeast Affiliate, Research Committee

g. Consultantships

Date	Name of consultantship
2005-	EPA special government employee, Arsenic Advisory Panel
1991-1994	Clinical Trial Design Consultant, Hoechst Marion Roussel (Marion Merrell Dow), Kansas City, MO
1988-1991	Clinical Trial Design Consultant, Merck Sharp and Dohme Research Laboratories, West Point, PA.

4. Service (Community Related)

Service to Community-Based Organizations

Year	Position and Organization	Type of Service
2005	Environmental Integrity Project	Consultant
2005	Clean Water Action	Consultant
2005	Clean Air Task Force	Consultant
2002	Montshire Museum of Science, Environmental Detectives Summer Teacher Institute	Consultant and lecturer in a course designed to educate middle school teachers

Other Related Service and Volunteer Activities.

Year	Position and Organization	Type of Service
2007	Pittsburgh Environmental Health Sciences Program	Created community outreach core to support a NIEHS Superfund Basic Research Program grant. Target communities surrounding the abandoned American Zinc and Chemical Company smelter, northern Washington County, PA.
2005	Informed resource for Forward Township residents coping with fly ash slide.	Attended town meetings to answer health concerns and connect residents to government agencies. Phone and email resource.
2001- 2003	Upper Valley Lightning Soccer Association	Youth soccer coach, board member
1996 - 2001	Hanover, NH Recreation Department,	Youth soccer coach,