

BIOGRAPHICAL SKETCH

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NAME Aaron Barchowsky, Ph.D.	POSITION TITLE Associate Professor		
eRA COMMONS USER NAME abarchowsky			
EDUCATION/TRAINING <i>(Begin with baccalaureate or other initial professional education, such as nursing, and include post doctoral training.)</i>			
INSTITUTION AND LOCATION	DEGREE <i>(if applicable)</i>	YEAR(s)	FIELD OF STUDY
North Carolina State University Raleigh, NC	B.S	1978	Zoology
Duke University Durham, NC	Ph.D.	1985	Pharmacology
Duke University Durham, NC	postdoc	1984-1988	Integrated Toxicology Program

A. Positions.

- 1984-1986 Research Associate in Pharmacology, Duke University Medical Center, Durham, NC.
- 1986-1988 Fellow, Integrated Toxicology Program, Duke University Medical Center, Durham, NC.
- 2/88-6/88 Medical Research Associate, Dept of Medicine, Duke University Medical Center, Durham, NC.
- 1988-1991 Research Assistant Professor of Medicine, and Assistant Professor of Pharmacology, Thomas Jefferson University, Philadelphia, PA.
- 1991-1998 Assistant Professor, Department of Pharmacology and Toxicology, Dartmouth Medical School, Hanover, NH.
- 1998-2003 Associate Professor, Department of Pharmacology and Toxicology, Dartmouth Medical School, Hanover, NH
- 2003-2007 Associate Professor, Department of Environmental and Occupational Health, University of Pittsburgh Graduate School of Public Health, Pittsburgh, PA.
- 2007- Associate Professor (with tenure), Department of Environmental and Occupational Health, University of Pittsburgh Graduate School of Public Health, Pittsburgh, PA.
- 2005- Associate Professor (secondary appointment), Department of Pharmacology and Chemical Biology, University of Pittsburgh School of Medicine.
- 2005- Director, Pittsburgh Environmental Health Sciences Program
- 2007- Director, Environmental and Occupational Health Ph.D. training program.

Honors and Service (last 10 years)

- 1996- 2003 American Heart Association, Northeast Affiliate, Research Committee.
- 1999-2001 SSS-3 study section for review of SBIR grants, NIH.
- 2001 NHLBI Special emphasis panel: SCORs in Lung Fibrosis.
- 2001 NIEHS Special emphasis panel: ARCH programs.
- 2002-2003 Member, Alcohol and Toxicology-1 (ALTX-1) study section, NIH.
- 2002-2008 External Advisory Committee, Univ. of Montana Center for Environmental Health Sciences
- 2002 National Academies of Science, Committee on the framework for evaluating the safety of dietary supplements; Chromium Picolinate I Working Group, July 2002
- 2003-2006 Member, Vascular Cell and Molecular Biology (VCMB) study section, NIH
- 2005 Society of Toxicology Best Paper of 2004 Award in *Toxicological Sciences*
- 2005- Environmental Protection Agency Scientific Advisory Board Arsenic Special Emphasis Panel
- 2006- Member, Advisory Board, University of Pittsburgh Academic Consortium for Excellence in Environmental Public Health Tracking (UPACE-EHPT)
- 2007-2010 Associate Managing Editor, Toxicological Sciences
- 2007-2010 Education Committee, Society of Toxicology (Chair 2009-2010).
- 2008-2009 Member, XNDA Conflict Applications special emphasis panel, NIH,
- 2008 Member, Systemic Injury from Environmental Exposure (SIEE) special emphasis panel, NIH.
- 2009 Member, Outstanding New Environmental Scientists special emphasis panel, NIEHS
- 2009 Member, Nanosafety Review special emphasis panel, NIEHS
- 2009 Member, Superfund P42 Review committee, NIEHS

B. Publications (selected out of 76 total peer reviewed publications)

1. 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.
2. 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.
3. 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.
4. 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.
5. 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.
6. 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.
7. 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.
8. 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.
9. Barchowsky, A. and KA O'Hara. Metal-induced cell signaling and gene activation in lung diseases. *Free Radic Biol Med*. 34:1130-1135, 2003.
10. O'Hara, KA, 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.
11. Soucy, NS, MA Ihnat, L Hess, DK Chandrashekar, LR Klei, C Clark, M Post, and A Barchowsky. Arsenic stimulates angiogenesis and tumorigenesis *in vivo*. *Toxicol Sci*, 76:271-279, 2003. **(Best Paper of the Year, 2004)**.
12. 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.
13. Gao F, A Barchowsky, AA Nemecek, 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.
14. 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:L442-449, 2005.
15. Soucy, NV, DD Mayka, LR Klei, AA Nemecek, JA Bauer, and A Barchowsky. Neovascularization and angiogenic gene expression following chronic arsenic exposure in mice. *Cardiovasc Toxicol* 5:29-41, 2005.
16. O'Hara, KA, AA Nemecek, 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.
17. Straub, AC, DB Stolz, MA Ross, NV Soucy, LR Klei and A Barchowsky. Arsenic stimulates sinusoidal endothelial cell capillarization and vessel remodeling in mouse liver. *Hepatology* 45:205-212, 2007.
18. O'Hara, KA, R J Vaghjani, AA Nemecek, LR Klei and A Barchowsky. Chromium(VI)-stimulated STAT3 tyrosine phosphorylation and nuclear translocation in human airway epithelial cells requires Lck. *Biochem J*. 402:261-9, 2007.
19. 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
20. 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.
21. 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-L490, 2007.
22. 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.
23. 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.
24. 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.

25. 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.
26. Straub AC, KA Clark, MA Ross, AG Chandra, S Li, X Gao, PJ Pagano, DB Stolz, **A Barchowsky**. Arsenic-stimulated liver sinusoidal capillarization in mice requires NADPH oxidase-generated superoxide. *J. Clin. Invest.* 118:3980-3989, 2008.
27. States, JC, S Srivastava, Y Chen, **A Barchowsky**. Arsenic and Cardiovascular Disease. *Toxicol Sci.* 107:312-323,2009.
28. Nemecek AA, GD Leikauf, BR Pitt, KJ Wasserloos, **A Barchowsky**. Nickel mobilizes intracellular zinc to induce metallothionein in human airway epithelial cells. *Am J Resp Cell Mol Biol* 41(1):69-75, 2009.
29. Bien 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 Resp Cell Mol Biol* 41:226-36, 2009.
30. 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.
31. Nemecek 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.
32. Liu F, **A Barchowsky**, and PL Opreko. The Werner Syndrome Protein Functions in Repair of Cr (VI)-induced Replication Associated DNA Damage. *Toxicol. Sci.* 110:307-318, 2009.
33. Nemecek AA, LM Zubrisky and **A Barchowsky**. Chromium(VI) stimulates Fyn to initiate innate immune gene induction in human airway epithelial cells. *Chem Res Toxicol* In Press.

C. Research support (past 5 years)

Active Research Support

NIEHS : 1 R01 ES013781-02 Mechanisms for arsenic-induced vascular disease.
Principal investigator: A Barchowsky
12/07-11/12

Aims: I. the molecular mechanism by which As(III) causes liver sinusoidal capillarization and remodeling in intact mice; II. the role of NOX generated superoxide in mediating As(III)-induced phenotypic conversion of primary murine and human LSEC; III. if an imbalance in LSEC GTPase activity mediates As(III) stimulated remodeling of the LSEC.

NIEHS: 3R01ES013781-02S1 Mechanisms for arsenic-induced vascular disease: competitive revision

Principal investigator: A Barchowsky
9/30/09-9/30/11

This is an ARRA supported revision of parent grant 1 R01 ES013781-02 that adds the additional aims of examining the impact of arsenic-stimulated liver vessel dysfunction on systemic metabolic changes and on the genetic profile and community structure in the gut microbiome.

Pending Research Support

NIEHS: 2 R01ES010638-06A1 Regulation of transcriptional competence by chromium
Principal investigator: A Barchowsky
8/09-7/14

Completed Research Support (past 5 years)

NIEHS: 3R01ES013781-01S1 Mechanisms for arsenic-induced vascular disease: minority non-student fellowship supplement.

Principal investigator: A Barchowsky
7/1/08-6/30/09

This is a non-student minority supplement to parent grant 1 R01 ES013781-01.

NIEHS: 1R01 ES10638-06 Regulation of transcriptional competence by chromium
Principal investigator: A Barchowsky
8/01-7/07