

# CURRICULUM VITAE MICHAEL

**C. MADDEN**

[Updated: April 2019]

## PERSONAL INFORMATION:

Work Address:        Research Biologist  
                         National Health and Environmental Effects Research  
                         Laboratory  
                         Environmental Public Health Division, Clinical Research Branch  
                         U.S. Environmental Protection Agency  
                         Mail Drop # 58B  
                         Research Triangle Park, NC 27711

OR

Human Studies Facility  
U.S. Environmental Protection Agency  
104 Mason Farm Road  
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Chapel Hill, NC 27599-7315

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## EDUCATION:

1973 - 1977    B. S., Biology, Manhattan College, Bronx, New York  
1977-1980    M.S., Zoology, University of Georgia, Athens  
1980-1986    Ph.D., Toxicology, University of North Carolina at Chapel Hill

## **PROFESSIONAL TRAINING AND EXPERIENCE:**

2014-present: Adjunct Professor, Dept. of Environmental Sciences and Engineering,  
School of Public Health, University of North Carolina at Chapel Hill (appointed through  
2017)

2011-present: Research Biologist, U.S. Environmental Protection Agency, GS-15 grade,  
Research Triangle Park, NC

2009-2014: Adjunct Associate Professor, Dept. of Environmental Sciences and Engineering,  
School of Public Health, University of North Carolina at Chapel Hill (appointed through  
2014)

2008-present: : Adjunct Associate Professor, Curriculum in Toxicology, University of North  
Carolina at Chapel Hill

2003-2011: Research Biologist, U.S. Environmental Protection Agency, GS-14 grade, Research  
Triangle Park, NC

1998-2003: Research Biologist, U.S. Environmental Protection Agency, GS-13 grade, Research  
Triangle Park, NC

1995-1998: Research Biologist, U.S. Environmental Protection Agency, GS-12 grade, Research  
Triangle Park, NC

1995-2008: Adjunct Assistant Professor, Curriculum in Toxicology, University of North  
Carolina at Chapel Hill

1993-2009: Adjunct Assistant Professor, Dept. of Environmental Sciences and Engineering,  
School of Public Health, University of North Carolina at Chapel Hill

1989- 1994: Research Associate, Center for Environmental Medicine and Lung Biology,  
University of North Carolina at Chapel Hill

1986-1989: Postdoctoral Fellow Trainee, Center for Environmental Medicine, University of  
North Carolina at Chapel Hill.

1983-1988: Lectured in ENVR 143, Dept. of Environmental Sciences & Engineering, University  
of North Carolina at Chapel Hill.

1980-1986: Research Assistant, Dept. of Medicine, University of North Carolina at Chapel Hill.

1980: Research Technician, Skidaway Institute of Oceanography, Savannah, Georgia.

1978-1980: Teaching Assistant, University of Georgia

1978- 1979: Research Assistant, Skidaway Institute of Oceanography, Savannah, Georgia

1975-  
1977: Chemistry Laboratory Assistant, Manhattan College.

## **Continued Training:**

- 1998 “Measurement of oxidative stress”, Continuing Education Course (3.5 hr), SOT Annual Meeting, Seattle, WA.
- 2001 “Genomic technologies applied to toxicology”, Mini-course (1 hr), SOT Annual Meeting, San Francisco, CA.
- 2001 “Diesel particulates and NOx emissions”, University of Leeds, UK course (Prof. Gordon Andrews, coordinator) at EPA facility in Ann Arbor, MI. Oct 22-Oct 26<sup>th</sup>. 35 hr.

- 2002 “Basic principles and protocols in molecular toxicology”, Continuing Education Course (3.5 hr), SOT Annual Meeting, Nashville, TN.
- 2002 HPLC repair course (3.5 hr), conducted by Waters Associates. RTP, NC.
- 2003 “Medicinal herbals and dietary supplements”, Continuing Education Course (3.5 hr), SOT Annual Meeting, Salt Lake City, UT.
- 2004 “Of mice and magnets: metabonomics technology in safety assessment”. Continuing Education Course (3.5 hr), SOT Annual Meeting, Baltimore MD.
- 2005 Human Subjects Research Ethics Training and Certification via Collaborative IRB Training Initiative (CITI) web site (2 hr).
- 2005 “Fundamentals of nanotechnology: chemistry, exposure, environmental/health assessment and societal impacts”. Mini-course (1 hr), SOT Annual Meeting, New Orleans, LA.
- Duke University National Human Subjects Protections Conference on “What is Acceptable Risk”, Sept 25-26, 2006. RTP, NC
- 2006 “Predictive Power of Novel Technologies (Cells to 'Omics'): Promises, Pitfalls and Potential”. Continuing Education Course (3.5 hr), SOT Annual Meeting, San Diego CA.
- 2007 “Allergy and Allergic Disease: A Primer for Toxicologists”. Continuing Education Course, SOT Annual Meeting, Charlotte, NC.
- 2008 “Dose-Response Modeling for Occupational and Environmental Risk Assessment”. Continuing Education Course, SOT Annual Meeting, Seattle, WA.
- 2011 “Current Nonclinical Strategies and Methods for Evaluating Drug-Induced Cardiovascular Toxicity”. Continuing Education Course, SOT Annual Meeting, Washington DC.
- 2015 “New Horizons in Chemical Carcinogenesis: Advances in Mode of Action and Mechanism of Cancer Pathogenesis”. Continuing Education Course, SOT Annual Meeting, San Diego, CA.
- 2016 “Basic Principles and Practices for Applying Epigenetics in Mechanistic Toxicology” Continuing Education Course, SOT Annual Meeting, New Orleans, LA.
- 2017 “Molecular Imaging for Toxicologists”, Continuing Education Course, SOT Annual Meeting, Baltimore MD.
- 2018 “The What, When, and How of Using Data from Alternative Testing Methods in Chemical Safety Assessments”, Continuing Education Course, SOT Annual Meeting, San Antonio TX.

**PROFESSIONAL HONORS, ASSOCIATIONS, and RESPONSIBILITIES:**

**Membership in Professional Societies:**

Academy of Toxicological Sciences

Phi Beta Kappa

Sigma Xi:

University of North Carolina-Chapel Hill, Chapter President 2013-2016 and Chapter Vice-President 2016-present; Deputy Chairman (2016) and Chairman (2017) of the Nominations Committee (2016-2018)

Society of Toxicology, National Chapter:

SOT Inhalation Specialty Section: Councilor 2003-2005

SOT Occupational & Public Health Specialty Section Vice-President Elect 2009

North Carolina Chapter Society of Toxicology,

Luxuriant Flowing Hair Club for Scientists

**Editorial Responsibilities:**

**Associate Editor** Inhalation Toxicology (2004-2015)

**Editorial Staff**

Inhalation Toxicology (January 1998-2016)

Journal of Breath Research (2015-present)

**Review Consultant** (Most Recent)

Aerosol Science and Technology

American Journal of Respiratory Cell and Molecular Biology

Archives of Environmental Contamination and Toxicology

Atmospheric Chemistry and Physics

Atmospheric Environment

Biomarkers

Cell Biology and Toxicology

Chemical Research in Toxicology

Chemosphere

Environmental Health Perspectives

Environmental Pollution

Environmental Research

Environmental Science and Technology

European Respiratory Journal

International Journal of Environmental Research and Public Health

Journal of Applied Toxicology

Journal of Breath Research

Journal of Chemistry

Journal of Chromatography B

Journal of Hazardous Materials

Journal of Toxicology and Environmental Health, Parts A & B

Journal of the Air and Waste Management Association

Mutagenesis

Mutation Research

Particle and Fibre Toxicology

PLOS One

Regulatory Toxicology and Pharmacology

Toxicology  
Toxicology and Applied Pharmacology  
Toxicology In Vitro  
Toxicology Letters  
Toxicology Research and Application  
Toxicological Sciences

**Ad Hoc Grant Reviewer** (last ~10 years):

University of North Carolina Center for Environmental Health and Susceptibility  
North Carolina State University Center for Human Health and the Environment  
Natural Environment Research Council (NERC), (London, U.K.)  
Asthma UK (London, UK)  
Kentucky Lung Cancer Research Program (Universities of Kentucky and Louisville)  
Research Council of the Lung Foundation Netherlands

**INVITED SCIENTIFIC PRESENTATIONS AND SEMINARS:**

1. "Uptake and depuration of polycyclic hydrocarbons by the American oyster". Southeastern Estuarine Research Society Annual Meeting. Wrightsville Beach, NC. 1980.
2. "Cellulose: Its limited effect in respiratory responses". American Chemical Society Annual Meeting. Philadelphia, PA. August, 1984.
3. "Effect of ozone exposure on arachidonic acid metabolism in pulmonary endothelial cells". Duke University, Durham, NC. January, 1987.
4. "Ozone inhibits endothelial cyclooxygenase via hydrogen peroxide". FASEB Annual Meeting. Washington, DC. April, 1987.
5. "Effect of ozone on lung cell arachidonic acid metabolism". Glaxo Pharmaceutical Corporation, Research Triangle Park, NC. August, 1989.
6. "Oxidized arachidonic acid and DNA damage". Duke University, Durham, NC. January 5, 1993.
7. "Effects of air pollutants on lung lipid metabolism in humans and rodent models". Ashland University, Ashland, OH. March 7, 1997.
8. "Biomarkers and Methods Development" Session Overview, HSD review 2/26/98 (Co-chairman with Jane Gallagher).
9. "The influence of co-pollutants on the toxicity of airborne particulate matter" Session Overview, SOT Annual Workshop, March 22, 1999; Philadelphia, PA. (Session co-chairman with Kent Pinkerton).
10. "An Historical Overview of the Ozone Exposure Problem", Fifth U.S. EPA NHEERL Symposium, "Indicators in Health and Ecological Risk Assessment", June 6-8, 2000, Research Triangle Park, NC. (Session co-chair with William Hogsett).
11. "Noninvasive approaches for toxicological research of the lung", SOT Annual Workshop, March 27, 2001; San Francisco, CA. (Session co-chair with William Foster).
12. "Diesel exhaust particulate health effects-results from in-vitro and in-vivo studies" Seminar, University of Washington, Oct. 24, 2002.

13. "Novel insights into the toxicology of lung oxidative stress", SOT Annual Symposium, March 11, 2003; Salt Lake City, UT (Session co-chair with Maria Kadiiska).
14. "In vitro and In vivo evaluation of toxicity of particles from differences sources", HEI Diesel Emissions Toxicity, November 6-7, 2003, Denver, CO.
15. "Lipomics, an important component of metabolomics, and possible use in toxicology studies" SOT Annual Meeting, March 22, 2004, Baltimore, MD. (Symposium co-chair with David White).
16. "Strategies to identify bioactive substances in complex air pollutant mixtures". SOT Annual Meeting, March 24, 2004, Baltimore, MD. (Workshop co-chair with Jack Harkema)
17. "Controlled diesel exposures: Inter-phasing human and animal studies and their use in the risk assessment process". SOT Annual Meeting, March 21-25, 2004, Baltimore, MD. 18. "Diesel Exhaust Exposure Studies: Some Key Questions Related to Health Effects, and Implications for Indoor Air Research" Syracuse University, October 24, 2005. Part of the 2005 Syracuse Symposium on Environmental and Energy Programs.
19. Invited Panelist for Discussion of Session entitled "Diesel Emissions: Recent Developments in Emissions, Health Effects and Impacts on Risk Assessment". 31<sup>st</sup> Winter Meeting, The Toxicology Forum. Washington DC, January 31, 2006.
20. "Comprehensive Responses of Lipid Classes to Toxicants and Involvement in Diseases". SOT Annual Meeting, March 7, 2006, San Diego, CA. (co-chair with Ron Riley)
21. "Diesel Exhaust Research: What Has It Told Us About Ambient Organic PM Toxicity". EPRI Workshop on Organic Aerosols EPRI Workshop Palo Alto CA October 24-25, 2006.
22. "Complex issues with examining diesel exhaust toxicity: Is the task getting easier or harder?" BfR Federal Institute for Risk Assessment, Alternative Test Methods in Inhalation Toxicology Congress. Berlin, Germany. May 7-9, 2007.
23. "Toxicologist for hire: Experiences in academia, federal government, and consulting", Ashland University, Ashland OH. Oct. 30, 2007. [Sponsored partially by SOT Education Committee]
24. "Measurements of air pollutant biomarkers with exhaled breath techniques". International Association for Breath Analyses Annual Meeting, Cleveland, OH. Nov. 1-3, 2007.
25. "The Toxicology of Biofuels Combustion Emissions" SOT Annual Meeting, March 20, 2008, Seattle, WA (co-chair with Flemming Cassee)
26. "Ozone Toxicology: Historical perspectives of the science that shaped the regulatory standards" SOT Annual Meeting, March 17, 2008, Seattle, WA. (co-chair with Daniel Costa)
27. University of California-Los Angeles & University of Southern California Exposure Assessment Workshop."Exhaled breath biomarkers with air pollution studies: what looks promising". July 10-11, 2008, Los Angeles.
28. "Validation studies of exhaled breath condensate biomarkers using diesel exhaust exposures". American Chemical Society Western Regional Meeting, Las Vegas, NV. September 23-27, 2008.
29. "Biomarkers: New Breakthroughs in the World of Air Pollution Studies". SOT Annual Meeting, Baltimore MD, March 15-19, 2009. (co-chair with Stephen Edwards)

30. SOT Special Regional Interest Symposium. “Biofuels & the Bay: Characterizing Health and Ecosystem Impacts in the Chesapeake”. SOT Annual Meeting, Baltimore MD, March 15-19, 2009. (Co-chair with Anne Jarabek)
31. “Examination of cytokines and metals in exhaled breath condensate and lung lavage fluids after diesel exhaust exposure.” Joint International Association of Breath Research and International Society of Breath Odor Research, Dortmund, Germany. April 26-30, 2009. [Note: US EPA NHEERL would not pay for travel; talk presented by NERL co-author.]
32. “Human lung responses to controlled diesel exhaust exposure”. 13<sup>th</sup> ETH (Eidgenössische Technische Hochschule) Conference on Combustion Generated Nanoparticles. Swiss Federal Institute of Technology, Zurich, Switzerland. June 22<sup>nd</sup> – 24<sup>th</sup> 2009. [Note: Could not attend due to personal medical reasons].
33. “Use of EBC Endpoints For Examination of Body Mass Index as a Susceptibility Factor to Diesel Exhaust “. At Exhaled breath analysis: From sensors to devices and applications. Engineering Conferences International. October 24-29, 2010. Barga, Italy.
34. Markers in Exhaled Breath Condensate and Lung After Diesel Exhaust Exposure”. Lecture at CNR (Council of National Research) Center of the Italian National Academy. Pisa, Italy. Oct. 22, 2010.
35. “Toxicological Considerations in the Gulf of Mexico Oil Spill” Society of Toxicology Annual Meeting. Washington DC March 2011.
36. SOT Biotechnology Specialty Section Reception Speaker. Co-speaker with Anne Chappelle. Biofuels: Toxicological Issues from Cradle to Grave. SOT Annual Meeting, Washington DC, March 6, 2011.
37. “Liquid Biofuels: toxicology of biomass combustion emissions”. Pennsylvania State Bioenergy Emissions and Health Impacts Course, March 2012, Harrisburg PA.
38. “Co-exposures of Volunteers to Petroleum Diesel Exhaust and Ozone to Examine Potential Synergistic Interactions”. Duke University, Durham, NC. January 18, 2013.
39. “Pulmonomics, the Exposome, and Microbiomes in Immunotoxicology”. Society of Toxicology Annual Meeting. San Antonio, TX. March 13, 2013.
40. “Breath Biomarkers from Viable Pulmonary Aerosols: Discovery of Human Microbiome Contributions.” Society of Toxicology Annual Meeting. San Antonio, TX. March 13, 2013.
41. “Controlled exposures of human volunteers to diesel engine exhaust: Biomarkers of exposure and health outcomes”. International Society of Aerosols in Medicine. Chapel Hill, NC. April 8, 2013.
42. “Are Biofuels More or Less Toxic than Conventional Fuels and What are the implications for Human Exposure and Risk?” Society Of Toxicology Workshop Session, Phoenix, AZ March 27, 2014 (Co-chair with Annemoon vanErp).
43. “Some Like It Hot: Impacts of Wildfires on Human Health”, Regional Interest Session. Society Of Toxicology Annual Meeting, March 2015 San Diego CA.(Co-Chair with Shelley DuTeaux).
44. “Variability of exhaled breath condensate (EBC) volume and pH using a feedback regulated breathing pattern”. International Association of Breath Research Annual Meeting, Vienna, Austria, September 14, 2015.

45. "Human and animal studies: portals into the whole body and whole population response". International Association of Breath Research Annual Meeting, Zurich, Switzerland, September 14-16, 2016.
46. "Effects of Combustion Emissions on Human Health". February 9, 2017. Auburn University-Montgomery. Partially sponsored by SOT Undergraduate Education Section.
47. "When 1+ 1≠ 2: Interactions between Ambient Air Pollutants Induces Greater than Additive Biological Effects". May 17, 2017. Allegheny-Erie Regional Chapter, Society of Toxicology Annual Meeting. Morgantown WV.
48. "Changes to the Common Rule Regulations and Implications for Human Research". Informational Session, Society Of Toxicology Annual Meeting, March 2018 San Antonio TX.(Co-Chair with Danielle Wikoff, Judy Zelikoff).

Additionally:

-Several Work-in-Progress presentations at EPA facilities in Chapel Hill between 1987-present (at least one/year).

-Lectures at in classes at UNC-CH in Environmental Science & Engineering ENVR732 (Health Effects of Outdoor and Indoor Air Pollution), ENVR 430 (Health Effects of Environmental Agents), ENVR 640 (Environmental Exposure Assessment), UNC-CH School of Medicine Biological and Biomedical Science Program; Duke University ENVIRON235 (Air Quality Management).

### **EPA LEADERSHIP:**

1. HSD Team Leader: Antioxidants 1996-1997.
2. HSD Team Member: Ozone Mechanisms, Ozone Dose Response, Particulate Matter. 1996-1997.
3. Team Co-Leader, Biomarkers and Methods Development Session, HSD Review 2/25-2/26/98.
4. NHEERL Synergy Workgroup Member for 1995-2000.
5. Participant, EPA sponsored Ozone Research Needs Workshop 3/25-3/27/97 Chapel Hill, NC.
6. Participant, EPA/NARSTO PM Workshop. 7/22-7/23/98 Chapel Hill, NC.
7. Organizing Committee, NHEERL Toxicology Extrapolation Workshop. 8/10-8/12/99, Research Triangle Park, NC.
8. Session Co-chairman, Ambient Ozone Session, Fifth U.S. EPA NHEERL Symposium, "Indicators in Health and Ecological Risk Assessment", 6/6-6/8/00, Research Triangle Park, NC.
9. Member, U.S. EPA Ozone Research Strategy Needs Document, 2000-2002.
10. Union Steward, American Federation of Government Employees Local 3347, AFL-CIO. 2000-200present.



11. Reviewer, U.S. EPA Air Quality Criteria for Particulate Matter (3<sup>rd</sup> external review draft, April 2002)
12. Member, EPA Workgroup on Nonroad Diesel- drafting preamble to new regulation proposal, 2002-2004.
13. Participant, First External Review Draft of the Ozone Criteria Document Workshops, 2003-2004, RTP, NC.
14. NHEERL Core Analytical Operations Workgroup, HSD representative, 2004-2006.
15. NHEERL-wide Awards Committee Member, AFGE representative, 2004 & 2005, 2007.
16. Contributor, EPA's Asthma Research Document, 2004.
17. Union Local 3347 Vice President for Office of Research and Development, American Federation of Government Employees, AFL-CIO. 2005-2010.
18. Member, Health Effects Institute (Organizer) Advanced Collaborative Emissions Study (ACES) Workgroup on Biological Screening of Emission Toxicity (2003-2006).
19. Member, NHEERL "Re "Visioning" Committee, AFGE representative, 2006.
20. Co-Author (with N. Mayer), Plaintiff Brief for Arbitration, FMCS Case no. # 060821-59004-3, American Federation of Government Employees, plaintiff, vs. United States Environmental Protection Agency, defendant. 2007
21. Inter-agency Federal Biomass Research and Development Board; Environment, Health, and Safety Team. 2008-2012.
22. Union Local 3347 Chief Steward, American Federation of Government Employees, AFL-CIO. 2010-present.
23. Contributor, US EPA "Biofuels and the Environment: the First Triennial Report to Congress" (2011 Final Report). Publication EPA/600/R-10/183F.  
<http://cfpub.epa.gov/ncea/biofuels/recordisplay.cfm?deid=235881>.
24. Contributor, US EPA "Biofuels and the Environment: Second Report to Congress". 2018. EPA report EPA/600/R-18/195. Washington DC.  
[https://cfpub.epa.gov/si/si\\_public\\_record\\_report.cfm?Lab=IO&dirEntryId=341491](https://cfpub.epa.gov/si/si_public_record_report.cfm?Lab=IO&dirEntryId=341491).

#### **EPA Honors:**

1. Scientific and Technical Achievement Award honorable mentionable (2001). [Dye, J.A., *M.C. Madden*, J.H. Richards, et al. Ozone Effects on Airway Responsiveness, Lung Injury, and Inflammation. Comparative Rat Strain and In Vivo/In Vitro Investigations]
2. US EPA Gold Medal for PM Team Research (2003).
3. Scientific and Technical Achievement Award honorable mentionable (2004). [Pralhad, A.K., Inmon, J., Dailey, L.A., *Madden, M.C.*, Ghio, A.J., Gallagher, J.E. Air pollution particles mediated oxidative DNA base damage in a cell free system and in human airway epithelial cells in relation to particulate metal content and bioreactivity.]
4. NHEERL Award 2006. Analytical Chemistry Core Implementation Team member.
5. NHEERL Award 2007. Goal 4 for Interdivisional Laboratory Research on Diesel Exposure Implementation.

6. 2007 Scientific and Technical Achievement Award Level III Award (awarded 2008). [Andrew J. Ghio (25%), Lisa A. Dailey (25%), Jackie Stonehuerner (25%), Michael Madden (25%). For: (1) Disruption of Iron Homeostasis as a Mechanism of Biologic Effect by Ambient Air Pollution Particles. *Inhalation Toxicology*, 17(13):709-716 (2005), (2) DMT1 Decreases Metal-Related Injury in the Lung. *American Journal of Physiology*, 289:L460-L467 (2005), (3) TNF, IFN-Gamma, and Endotoxin Increase Expression of DMT1 in Bronchial Epithelial Cells. *American Journal of Physiology*, 289:L24L33 (2005).]
7. ORD Bronze Medal for Commendable Service Award 2008. Analytical Chemistry Core Workgroup and Implementation Team.
8. ORD Bronze Medal for Commendable Service Award 2008. Exhaled Breath Condensate Research Team.
9. ORD Bronze Medal for Exceptional/Outstanding ORD Technical Assistance to the Regions or Program Offices Award 2012. Diesel Exhaust Studies Team.
10. US EPA 2011 Scientific and Technical Achievement Award, Honorable Mention. Innovative Analytical and Statistical Methods for Identifying Environmental and Background Chemicals in Human Blood.
11. US EPA 2015 Scientific and Technical Achievement Award, Level III. Kahle JJ, Neas LM, Devlin RB, Case MW, Schmitt MT, **Madden MC**, Diaz-Sanchez D. Interaction effects of temperature and ozone on lung function and markers of systemic inflammation, coagulation, and fibrinolysis: a crossover study of healthy young volunteers. *Environ Health Perspect*. 2015 Apr;123(4):310-6.
12. ORD Bronze Medal for Commendable Service Award 2016. Human Research Protections Team.
13. US EPA. 2016 Scientific and Technical Achievement Award, Honorable Mention. Strynar, Mark; Stiegel, Matthew; Sobus, Jon; Pleil, Joachim; Oliver, Karen; Olenick, Cassandra; **Madden, Michael**; Hu, Di; Funk, William; Clark, Mary. (1) Estimating Lifetime Risk from Spot Biomarker Data and Intra-class Correlation Coefficients (ICC). Published by *Journal of Toxicology and Environmental Health*. (2) Estimating Common Parameters of Log-normally Distributed Environmental and Biomonitoring Data. Published by *Journal of Toxicology and Environmental Health*.
14. US EPA. 2016 Scientific and Technical Achievement Award, Level II. **Madden, Michael**; Stevens, Tina; Case, Martin; Schmitt, Michael; Diaz-Sanchez, David; Bassett, Maryanne; Montilla, Tracey; Bertsen, John; Devlin, Robert. Diesel Exhaust Modulates Ozone-induced Lung Function Decrements in Healthy Human Volunteers. Published in *Particle & Fibre Toxicology*.
15. US EPA. 2016 Scientific and Technical Achievement Award, Honorable Mention. M. Strynar et al. Estimating Lifetime Risk from Spot Biomarker Data and Intra-class Correlation Coefficients (ICC). Published in *Journal of Toxicology and Environmental Health*, 2013, 76(12):747-66; and Estimating Common Parameters of Log-normally Distributed Environmental and Biomonitoring Data. Published in: *Journal of Toxicology and Environmental Health*, 2014, 17(6):341-68.
16. US EPA. 2017 Scientific and Technical Achievement Award, Level II. DB Miller et al., Researching the role of neuroendocrine stress axes activation in systemic and pulmonary health effects of air pollutants. Published in *Am J Respir Crit Care Med*. 2016.

### **GRANT SUPPORT:**

1. Sigma Xi Grant-in Aid of Research, Principal Investigator. "Uptake and depuration of four petroleum hydrocarbons by the American oyster, *Crassostrea virginica*." 1978.
2. Society of Toxicology Student Travel Award, 1985.
3. American Lung Association of North Carolina Grant, Principal Investigator. "Effects of Ozone on Arachidonate Metabolism in Human Lung Cells", \$9,620. July 1, 1987 - June 30, 1988; Renewed \$8,880. July 1, 1988 - June 30, 1989.
4. National Institute of Environmental Health Sciences. Principal Investigator. "Role of Eicosanoids in Ozone-Induced Lung Injury." 8/1/89 - 7/31/94. 1-R01-ES04951-01, \$62,098 Direct costs for fiscal year 1993-94.
5. U.S. Environmental Protection Agency Cooperative Agreement "Collaborative Clinical Research on Health Effects of Exposure to Air Pollutants." P. Bromberg, PI. 12/16/90-12/15/95.  
CR-817643, M. Madden, Co-investigator: \$61,237 Direct costs for fiscal year 1992-93.
6. HSD infrastructure funds for one graduate student 1997-99.
7. NHEERL Synergy Travel Award, 2001. (To NHEERL WED-Corvallis) 8. NHEERL Bioinformatics/CompTox Center Award 2004.
9. Society of Toxicology Education Committee Travel Sponsorship for presentation to undergraduate students, Ashland University, Ashland OH. 2007.
10. US EPA Internal ORD Competition for Biofuels Toxicology Funding. *Effect of Biofuel Combustion Constituents on Cardiopulmonary Responses in Rodents and Humans*; M. Madden, PI [team of 15 EPA co-investigators, 2 nonEPA investigators] Total \$944K funding/ 2 years
11. US EPA Internal ORD Competition for Biofuels Toxicology Funding.. *Toxicity screening of Bio-Diesel fuels through in vitro exposure to photo-processed combustion exhausts*. J. Offenbach (NERL), PI [M.Madden one of 5 EPA co-investigators] Total \$525K funding/ 2 years.

### **UNDERGRADUATE, GRADUATE, AND POSTGRADUATE TRAINING RECORD:**

#### **Graduate and Professional Student Mentorship:**

1. David Wright, Master of Science 1992, Curriculum in Toxicology, University of North Carolina at Chapel Hill. [Committee Member]
2. J. Philip Smith, 1992-1994. Curriculum in Toxicology, University of North Carolina at Chapel Hill.
3. Katherine Kraft, 1993-1999. Curriculum in Toxicology, University of North Carolina at Chapel Hill.
4. Jiann-Gwu Lee, 1993-1995. Cell Biology Program, North Carolina State University.

5. Monique Richards, 2000. Curriculum in Toxicology, University of North Carolina at Chapel Hill. [Lab rotation].
6. Alejandro Molinelli, 2001-2006. Doctor of Philosophy. Curriculum in Toxicology, University of North Carolina at Chapel Hill. [Research Advisor].
7. Demetra Stamm, 2001. School of Medicine, University of North Carolina at Chapel Hill. [Lab rotation].
8. Sailaja Mundandhara, 2002-2004. Postdoctoral Fellow, University of North Carolina-Chapel Hill, Center for Environmental Medicine, Asthma, and Lung Biology. [Mentor]
9. Keegan Sawyer [formerly Musgrove-Wesley]. 2003-2008. Department of Environmental Sciences and Engineering. [Doctoral Research Advisor]
10. Miyoung Yoon. 2003-2007. National Research Council Postdoctoral Fellow. [Co-mentor with Hugh Barton]
11. Weiyang Zhu. 2004-2009. Postdoctoral Fellow, University of North Carolina-Chapel Hill Center for Environmental Medicine, Asthma, and Lung Biology. [Co-mentor with Ian Gilmour]
12. Lars Perlmutter. 2007-2009. Department of Environmental Sciences and Engineering. [Master's Research Advisor]
13. Tina Stevens, 2004-2008, Curriculum in Toxicology Doctoral Candidate. Committee Member.
14. Tina Stevens, 2008-2011, US EPA R-authority post doctoral fellow, Co-mentor (with D. Diaz-Sanchez)
15. Matt Steigel, 2012-2015. Doctoral student, UNC Dept Environ. Sci. & Engineer. Committee Member.
16. Kim deBruijne, 2010-2011. Doctoral candidate, UNC Dept Environ. Sci. & Engineer. Committee Member.
17. Laya Bhavaraju, 2011-2015. Doctoral Candidate, UNC Curriculum in Toxicology. Research Advisor.
18. Nicole Kurhanowitz, 2012. UNC Curriculum in Toxicology. Laboratory Rotation Advisor.
19. Virginia Bass. 2014- present UNC Department of Environmental Sciences and Engineering. [Doctoral Research Advisor]
20. Brett Winters, 2014-present. UNC . Doctoral Candidate, Curriculum in Toxicology. [Research Advisor. ]
21. Sibel Mentese, Visiting Scientist University of Çanakkale, Turkey. 2015-2016.

#### **Undergraduate Student Mentorship:**

1. Sadhana Char, 1993. University of North Carolina at Chapel Hill.
2. Sujankumar Patel, 1993. University of North Carolina at Chapel Hill.
3. Ripa Patel, 1994. University of North Carolina at Chapel Hill.
4. Margaret Brewinski, 1997. St. Andrew's Prebyterian College, Laurinburg, NC.
5. Dawn Reilly, 1997-1998. University of North Carolina at Chapel Hill.
6. Anna Calderon, 1997. Universidad Autonoma Metropolitana, Mexico City, Mexico

7. Charles Marshall, 1998. St. Andrew's Prebyterian College, Laurinburg, NC.
8. Ahtavea Castellanos. 2002. Texas Southern University, Houston, TX.
9. Benjamin Wiener. 2009. University of North Carolina at Chapel Hill.
10. Joshua Hardin, 2013. University of North Carolina at Chapel Hill

## **COMMUNITY SUPPORT**

**Special Olympics Orange County** Head Coach 1998-present (Basketball, Soccer, Softball)

**The Arc of Orange County Board of Directors** 2010-2014; President 2013-2014;

**The Arc of the Triangle Board of Directors** (2014-2018) [Merger of The Arcs of Orange, Wake, and Durham Counties]; President 2014-2015; Recent Past President 2015-2018.

## **PUBLICATIONS:**

### **Thesis:**

"Uptake and depuration of four polycyclic hydrocarbons by the American oyster, Crassostrea virginica" (under the direction of Robert Taylor, Ph.D.). 1980. Department of Zoology, University of Georgia, Athens.

### **Dissertation:**

"Ozone-induced alterations in arachidonic acid metabolism in cultured lung cell types" (under the direction of Mitchell Friedman, MD). 1986. Curriculum in Toxicology, University of North Carolina at Chapel Hill.

### **Journal Articles (Peer Reviewed):**

PubMed records (incomplete listing):

<http://www.ncbi.nlm.nih.gov/sites/myncbi/1tcKmW9M-t8Qi/bibliography/45377317/public/?sort=date&direction=ascending>

1. Friedman, M., D. S. Saunders, *M. C. Madden*, K. Gammon and L. Kwock. Ozone inhibits prostacyclin synthesis in pulmonary endothelium. Prostaglandins. 30: 1069-1083, 1985.
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**Manuscripts in preparation** (for Peer-reviewed journal submission)

J. Mirowsky, MC Madden. Review of latest findings of environmental pollution effects discerned using exhaled breath measurements. For JTEH, Part A.

L. Bhavaraju, U. Kodavanti, MC Madden., Biodiesel exhaust particle extract interferes with lipid mediated vasodilation in vitro exposure. In preparation.

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#### **Selected Abstracts (last 10 years only):**

*Madden, MC*, Cassee, F. The Toxicology of biofuels combustion emissions. SOT Annual Meeting, March 20, 2008, Seattle, WA.

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Knuckles, T, Lund, AK, Lucas, S, *Madden, M*, Campen, MJ. Systemic Disposition of Inhaled Nitric Oxide, a Significant Component of Vehicular Emissions. SOT Annual Meeting, Baltimore MD, March 15-19, 2009.

Pleil, JD, *Madden, MC* . Measurements of breath: assessing between-subject variance components of biological response to external stressors. Joint International Association of Breath Research and International Society of Breath Odor Research, Dortmund, Germany. April 26-30, 2009

*Madden, MC*, Pleil JD, Sawyer, K. Examination of cytokines and metals in exhaled breath condensate and lung lavage fluids after diesel exhaust exposure. . Joint International Association of Breath Research and International Society of Breath Odor Research, Dortmund, Germany. April 26-30, 2009.

Pleil , JD, Stiegel, MA, Sobus, JR, Tabucchi, S, Ghio, AJ, *Madden, MC*. Human blood and plasma analysis for trace-level polycyclic aromatic hydrocarbons (PAHs). Submarine Air Monitoring Air Purification Conference, San Diego, CA. October 19-22, 2009.

T Stevens, WY Cheng, I Jaspers, M Madden. Effect of short-term exposure to diesel exhaust particles and carboxylic acids on mitochondrial membrane disruption in airway epithelial cells. American Thoracic Society Annual Meeting, New Orleans LA, May 2010.

Pleil JD, Stiegel MA, Madden MC, and Sobus JR, 2010. "Heat Map Visualization of Complex Breath Biomarker Measurements for Environmental and Intelligence Applications", invited lecture, Exhaled Breath Analysis: from Sensors to Devices to Applications, Engineering Conferences International, Barga Italy, Oct. 24-30.

L. Bhavaraju, J. Shannahan, A. Williams, R. McCormick, J. McGee, U. Kodavanti, *M.Madden*. Comparative toxicity of biodiesel exhaust and petroleum diesel exhaust particulate matter using WKY rat alveolar macrophages. Society of Toxicology Annual Meeting, Salt lake City UT, 2011.

"Toxicological Considerations in the Gulf of Mexico Oil Spill" Society of Toxicology Annual Meeting. Washington DC March 2011.

Pleil JD, Stiegel MA, Madden MC, Sobus JR, 2011. “Dealing with analytical results from breath analysis: What is real, what is background, and what is random?”, invited lecture, PittCon 2011, Atlanta, GA, March 14.

L. Bhavaraju, *M. Madden*, U. Kodavanti, T.Kormos, J. Pleil, A. Williams, and R. McCormick. Analysis of biodiesel and petroleum diesel exhaust particle extract and the effect on endothelial cell toxicity and antioxidant response. Society of Toxicology Annual Meeting, Washington March 2012

T. Stevens, M. Case, J. Berntsen, C. Olenick, M. Bassett, T. Montilla<sup>1</sup>, H. Hiers, J. Pleil, D. Diaz-Sanchez, and *M. C. Madden*. Effects of combinations of diesel exhaust and ozone exposure on lung function in human volunteers. Society of Toxicology Annual Meeting, Washington DC, March 2012.

*M. Campen*, M. C. Channell, *M. Madden*, and R. Devlin. Plasma obtained following nitrogen dioxide or diesel engine emissions exposure induces adhesion molecule expression in human coronary artery endothelial cells. Society of Toxicology Annual Meeting, Washington DC, March 2012.

T Stevens, M Case, J Pleil, D Diaz-Sanchez, W Cascio, RDevlin, M Madden. Effects of combinations of ozone and diesel exhaust on blood, cardiac, and lung endpoints. American Thoracic Society Annual meeting, San Francisco CA, May 2012.

Pleil JD, Stiegel MA, Kormos TM and Madden MC, 2012 “Environmental health applications for exhaled breath aerosols: Investigations of inflammatory proteins and opportunistic infections”, plenary lecture: International Breath Analysis Meeting, Sonoma, CA, October 28-November 1.

L. Bhavaraju, A. Williams, T. Kormos, *M. Madden*. Compare *In Vitro* Endothelial Cell Release of Endothelium Derived Vasodilators in Response to Diesel, Biodiesel Blend and Biodiesel Neat Combustion Extract. Society of Toxicology Annual Meeting, San Antonio TX, March 2013.

“Breath Biomarkers from Viable Pulmonary Aerosols: Discovery of Human Microbiome Contributions.” Society of Toxicology Annual Meeting. San Antonio, TX. March 13, 2013. *Michael Madden*, Joachim Pleil.

“Respiratory and Cardiac Effects from Sequential and Simultaneous Exposures of Diesel and Ozone”. T Stevens, M Case, J Pleil, D Diaz-Sanchez, W Cascio, R Devlin, *M Madden*. US EPA Clean Air Centers Annual Meeting, Seattle, WA. July 2013

T. Stevens, M. Case, A. Rappold, J. Pleil, D. Diaz-Sanchez, W. Cascio, and *M. C. Madden*. Cardiovascular Effects of Diesel Exhaust and Ozone in a Multipollutant Context.

Society of Toxicology Annual Meeting, Phoenix AZ, March 2014

“Pulmonomics, the Exposome, and Microbiomes in Immunotoxicology: Introduction.” Society of Toxicology Annual Meeting. San Antonio, TX. March 13, 2013. *M. Madden*.

“Are Biofuels More or Less Toxic than Conventional Fuels and What are the implications for Human Exposure and Risk?” Society Of Toxicology Workshop Session, Phoenix, AZ March 27, 2014 (Co-chair with Annemoon vanErp).

M Campen, *M Madden*, J Schisler, M Willis. Transcriptional Endothelial Biosensor Response to Diesel-Induced Plasma Compositional Changes. American Thoracic Society Annual Meeting, San Diego CA, May 2014.

Angrish MM, Madden MC, Pleil JD, 2014. “Gas phase probe molecules for assessing *in vitro* metabolism to infer an *in vivo* response.” *ToxCast Data Summit*, US EPA, September 29–30.

Pleil JD, Angrish MM, Madden MC, 2015. Adverse outcome pathways (AOPs) in human systems biology: Gas-phase probes for assessing *in vitro* enzyme system perturbations, invited symposium, PittCon 2015, New Orleans, LA, March 8-12.

“Some Like It Hot: Impacts of Wildfires on Human Health: Introduction”, Regional Interest Session. Society Of Toxicology Annual Meeting, March 2015 San Diego CA.(Co-Chair with Shelley DuTeaux). *M. Madden*

Virginia L. Bass, S. J. Snow, U. P. Kodavanti, M. C. Madden. Hydroxyoleic acid, but not oleic acid, inhibits pharmacologic vascular responsiveness in isolated aortic tissue. (Abstract accepted by Society of Toxicology for 2017 meeting).

V. L. Bass, M. C. Madden. Oleic acid exposure of cultured endothelial cells alters lipid mediator production. (Abstract accepted by Society of Toxicology for 2016 meeting)

Virginia L. Bass, Mette C. Schladweiler, Urmila P. Kodavanti, Andrew J. Ghio, Michael C. Madden. Oleic acid induces acute pulmonary injury and inflammation *in vivo*. 2018 SOT Annual Meeting, San Antonio TX March 12-15.

Brett R. Winters, Michelle M. Angrish, Ariel M. Wallace, Joachim D. Pleil and Michael C. Madden: Metabolomics Approach for Toxicity Screening of Volatile Substances. 2018 SOT Annual Meeting, San Antonio TX March 12-15.

“In Vitro Toxicity Screening Technique for Volatile Substances Using Flow-Through System”. Winters BR, Angrish MA, Wallace A, and Madden MC. Poster presented at the Society of Toxicology Annual Meeting. Baltimore, MD. March, 2017.

“Standardization of Breath Collection.” Madden MC, Dailey L, Pleil JD, Stiegel MA, and Winters BR. Poster presented at the Society of Toxicology 55<sup>th</sup> Annual Meeting, New Orleans, LA. March, 2016.

M. Madden and D. Wikoff. Changes to the Common Rule Regulations and Implications for Human Research. Informational Session accepted for SOT Annual Meeting 2018.

“In Vitro Toxicity Assessment Technique for Volatile Substances using Cytochrome P450 Isozyme-specific metabolic pathways”. Winters BR, Angrish MA, Wallace A, and Madden MC. Invited Speaker at Pittsburgh Conference on Analytical Chemistry and Applied Spectroscopy (Pittcon), Chicago, IL. March, 2017.

“Gas-Phase Molecular Probe for High Throughput Screening.” Winters BR, Angrish MA, Mentese S, Madden MC, and Pleil JD. Poster presented at the Gordon Drug Safety Research Conference, Easton, MA. June 2016.

“Standardization of Breath Collection.” Winters BR, Dailey L, Madden MC, Pleil JD, and Stiegel MA. Poster presented at the 2016 Visiting Pulmonary Scholars Symposium, Chapel Hill, NC. May 4, 2016; and 2016 North Carolina Society of Toxicology Annual Meeting, RTP, NC. March, 2016.

“Standardization of Breath Collection.” Madden MC, Dailey L, Pleil JD, Stiegel MA, and Winters BR. Poster presented at the Society of Toxicology 55<sup>th</sup> Annual Meeting, New Orleans, LA. March, 2016

“Variability of exhaled breath condensate (EBC) volume and pH using a feedback regulated breathing pattern.” Madden MC, Winters BR, Stiegel MA, Risby TH, Angrish MM and Pleil JD. Presentation at the International Association of Breath Research, Vienna, Austria. September, 2015.

