Morgan Domanico, Ph.D.

Health Scientist

Summary of Experience

Dr. Morgan Domanico is a toxicologist with experience applying analytical methods and toxicological principles to investigate health hazards posed by various xenobiotics present in our environment. She received her Bachelor of Science in Biology with a minor in Chemistry from Washington College (Maryland) in 2019. After receiving her undergraduate degree, she joined the Pharmacology and Toxicology Ph.D. program at the University of California, Davis, as a member of Dr. Laura Van Winkle's laboratory. Here, her graduate work focused on various toxic outcomes in the lung following xenobiotic exposure—including genotoxicity, cytotoxicity, and altered lung development—as well as the role of enzymatic bioactivation in influencing toxicity. She held a dual appointment at Lawrence Livermore National Laboratory to leverage the use of radiolabeled compounds in characterizing DNA adduct formation following naphthalene exposure. Her research experience included investigation of particles and vapors in cell culture models, ex vivo systems, and in vivo rodent models through analytical chemistry, microscopy, and molecular biology techniques. Her skillset includes conducting a wide array of statistical analyses, creating clear and concise visualizations, and presenting her work to varied audiences. Dr. Domanico also has previous experience utilizing in silico computational models for risk assessment of compounds off-gassed/leached from medical devices. Her recent research interests involve the application of computational tools to solve complex toxicological problems and support product stewardship initiatives. Dr. Domanico has published over 17 abstracts and peer-reviewed papers on various topics in respiratory toxicology.

Education

Bachelor of Sciences (B.S.), Biology, 2019, Washington College

Doctor of Philosophy (Ph.D.), Pharmacology and Toxicology, 2024, University of California, Davis

Phone 949.989.4077 | Fax 949.989.4092 | 333 Corporate Drive, Suite 130, Ladera Ranch, CA 92694

Project Experience

Respiratory Toxicology Research

Gained extensive experience in the field of toxicology through researching a variety of potential respiratory toxicants, including both vapors and particles found in the environment. Assessed the air pollutant naphthalene for a potential genotoxic mechanism by leveraging a highly-sensitive technique, accelerator mass spectrometry, to detect stable ^{14}C-labeled DNA adducts formed in ex vivo and in vivo murine models. Investigated the respiratory pathology and potential mechanisms behind the respiratory toxicity of chloropicrin, a widely-used pesticide and historic chemical warfare agent. Explored the potential of a polychlorinated biphenyl to alter typical lung development following gestational and lactational exposure in a mouse model. Provided auxiliary support to investigate the role of real-world traffic-related air pollution in Alzheimer's Disease progression in rats, as well as the metabolomic characterization of allergen-induced asthma in a mouse model. Screened a variety of engineered nanomaterials and wildland-urban interface smoke composites for cytotoxicity in lung cell culture models.

Data Analysis and Statistics

Experienced in utilizing R programming for complex statistical analyses and data management, including large metabolomics datasets. Highly proficient in applying graphic tools such as Biorender, R, and Adobe Creative Cloud to create concise and comprehensible visualizations for complex biological data and systems. Each presentation and first-author manuscript has included at least one generated graphic.

Exposure and Risk Assessments

Experience conducting risk assessment of product impurities, including compounds off-gassed or leached from medical devices. Familiar with computational tools and other new approach methodologies (NAMs) for risk assessment of chemicals.

Professional Experience

Health Scientist, Valeo Sciences LLC, July 2025 – Present

Apply expertise in pharmacology and toxicology to assess potential health hazards of consumer products and manage risks associated with exposure. Conduct comprehensive human health risk assessments to support product stewardship and regulatory compliance. Collaborate with inter-disciplinary teams to address human and environmental health concerns.

Postdoctoral Scholar, University of California, Davis, October 2024 – July 2025

Assessed chloropicrin, a widely used pesticide and chemical warfare agent, for mechanisms of respiratory toxicity in a mouse model. Leveraged lipidomics analysis to identify molecular targets in the lung of an unintentional industrial environmental contaminant. Managed the UC Davis Cellular and Molecular Imaging Core and Van Winkle Laboratory daily operations, including compliance with institutional animal use protocols, controlled substances, and safety regulations.

Graduate Student Researcher, Laura Van Winkle Lab – University of California (UC) Davis, September 2019 – September 2025

Determined the effects of enzymatic bioactivation on a ubiquitous air pollutant, naphthalene, and how different bioactivation pathways may lead to genotoxicity through DNA adduct formation. Maintained a dual appointment at Lawrence Livermore National Laboratory (LLNL) and was solely responsible for coordinating experiments and data between UC Davis and LLNL laboratories. Assessed murine airway epithelium for alterations following gestational and lactational exposure to a polychlorinated biphenyl congener. Screened engineered nanomaterials and engineered wildland-urban interface smokes (from a novel burner system) for respiratory cytotoxicity in cell culture models.

Consultant, Risk Science Consortium, June 2019 – September 2019

Conducted literature reviews following OECD guidelines to identify compounds extractable from medical devices. Predicted compound respiratory toxicity and skin sensitization potential using six different in silico computational models, including OECD Toolbox and Toxtree.

Professional Membership and Service

- American Society for Pharmacology & Experimental Therapeutics (ASPET)
- Society of Toxicology (SOT):
  Inhalation and Respiratory Specialty Section Member
  Carcinogenesis Specialty Section Member

Peer-Reviewed Publications

Domanico, M.C., N.M. Collette, E. Ubick, X. Ding, B.A. Buchholz, and L.S. Van Winkle. 2025. DNA adducts form in mouse lung and liver after oral naphthalene exposure. Toxicol Sci, 205(1):42-46. PMID: 39921883. PMCID: PMC12038229. https://doi.org/10.1093/toxsci/kfaf017

Domanico, M., A. Fukuto, L.M. Tran, J.M. Bustamante, P.C. Edwards, K.E. Pinkerton, S.M. Thomasy, and L.S. Van Winkle. 2022. Cytotoxicity of 2D engineered nanomaterials in pulmonary and corneal epithelium. NanoImpact, 26, 100404. PMID: 35560287. PMCID: PMC9205178. https://doi.org/10.1016/j.impact.2022.100404

Stevens, N.C., S. Shen, J.M. Martinez, V.J.B. Evans, **M.C. Domanico**, E.K. Neumann, LS. Van Winkle, and O. Fiehn. 2025. Resolving multi-image spatial lipidomic responses to inhaled toxicants by machine learning. Nat Commun, 16, 2954 (2025). PMID: 39026864. PMCID: PMC11257454. https://doi.org/10.1038/s41467-025-58135-4

Stevens, N.C., V.J.B. Evans, **M.C. Domanico**, P.C. Edwards, L.S. Van Winkle, and O. Fiehn. 2022. Alteration of glycosphingolipid metabolism by ozone is associated with exacerbation of allergic asthma characteristics in mice. Toxicol Sci, 191(1): 79-89. PMID: 36331340. PMCID: PMC9887677. https://doi.org/10.1093/toxsci/kfac117

Published Abstracts

Wu, X., S. Hannon, **M. Domanico**, W. Han, I. Studer, B.A. Buchholz, Q. Zhang, L.S. Van Winkle, and X. Ding. 2025. Occurrence of Reactive Naphthalene Metabolites in the Brain of Naphthalene Exposed Mice and Potential Toxic Outcome. Abstract #168622. Poster Presentation at the American Society for Pharmacology and Experimental Therapeutics (ASPET) Annual Meeting 2025. April 3-5, 2025. Portland, OR.

Domanico, M.C., R.J. Wilson, N.C. Stevens, H. Park, R. Mendieta, C.R. Klocke, H.K. Panesar, L.M. Tran, D.P. Pillai, P.C. Edwards, P.J. Lein, and L.S. Van Winkle. 2025. Lung Lipid Abundance is Altered by Developmental Exposure to 3,3'-dichlorobiphenyl (PCB 11). Abstract #2024. Oral Symposium Session Presentation at the Society of Toxicology (SOT) Annual Meeting and ToxExpo. March 16-20, 2025. Orlando, FL.

Park, H., M. Cheng, A.E. Valenzuela, **M. Domanico**, K.J. Bein, L.S. Van Winkle, and P.J. Lein. 2025. Sex-Specific Effects of Inhaled Traffic-Related Air Pollution Particulate Matter and Gases on Systemic and Pulmonary Inflammatory Responses in a Transgenic Rat Model of Alzheimer's Disease. Abstract #3443. Poster Presentation at the Society of Toxicology (SOT) Annual Meeting and ToxExpo. March 16-20, 2025. Orlando, FL.

Domanico, M.C., N.M. Collette, E. Ubick, X. Ding, B.A. Buchholz, and L.S. Van Winkle. 2024. Naphthalene-DNA Adducts Detected in Mouse Liver Following Acute Oral Exposure. Abstract #93053. Oral Symposium Session Presentation and Poster Presentation at the American Society for Pharmacology and Experimental Therapeutics (ASPET) Annual Meeting 2024. May 16-19. Arlington, VA.

Domanico, M.C., N.M. Collette, E. Ubick, X. Ding, B.A. Buchholz, and L.S. Van Winkle. 2024. DNA adducts detectable in lung after in vivo naphthalene exposure. Abstract #4267. Poster Presentation at the Society of Toxicology (SOT) Annual Meeting and ToxExpo. March 10-14, 2024. Salt Lake City, UT.

Park, H., M. Cheng, N. Nasim, A.E. Valenzuela, **M. Domanico**, K.J. Bein, L.S. Van Winkle, and P.J. Lein. 2024. Differential Effects of Traffic-Related Air Pollution on Cytokine Levels in the Plasma and Lung of Female TgF344-AD Rats. Abstract #4017. Poster Presentation at the Society of Toxicology (SOT) Annual Meeting and ToxExpo. March 10-14, 2024. Salt Lake City, UT.

Stevens, N.C., J.D. Martinez, V.J. Brown, **M.C. Domanico**, L.S. Van Winkle, and O. Fiehn. 2024. Mass Spectrometry Imaging Reveals Spatial Lipidomic Perturbations following Ozone-Induced Exacerbation of Allergic Asthma Characteristics in Mice. Abstract #2048. Poster Presentation at the Society of Toxicology (SOT) Annual Meeting and ToxExpo. March 10-14, 2024. Salt Lake City, UT.

Domanico, M.C., S.A. Carratt, P.C. Edwards, X. Ding, B.A. Buchholz, and L. S. Van Winkle. 2023. Naphthalene-DNA Adducts Persist after 24 Hours in C57BL/6 Mouse Airway Explants. Abstract #3591. Poster Presentation at the Society of Toxicology (SOT) 62nd Annual Meeting and ToxExpo. March 19-23, 2023. Nashville, TN.

Park, H. M. Cheng, A.E. Valenzuela, A. Ikeda, **M. Domanico**, V. Brown, K. Bein, L.S. Van Winkle, and P.J. Lein. 2023. Sex-Dependent Effects of Traffic-Related Air Pollution on Leukocyte Recruitment in Bronchoalveolar Lavage Fluid. Abstract #3364. Poster Presentation at the Society of Toxicology (SOT) 62nd Annual Meeting and ToxExpo. March 19-23, 2023. Nashville, TN.

Stevens, N.C., V. Brown, **M. Domanico**, P. C. Edwards, L. S. Van Winkle, and O. Fiehn. 2023. Acute Ozone Exposure Exacerbates House Dust Mite-Induced Airway Hyperresponsiveness in Mice. Abstract #3508. Poster Presentation at the Society of Toxicology (SOT) 62nd Annual Meeting and ToxExpo. March 19-23, 2023. Nashville, TN.

Tran, L.M., P.C. Edwards, W. Yang, Q. Zhang, W. Han, N. Kovalchuk, S. Hannon, L. Ding, X. Wu, X. Fan, J. Bustamante, J. S. Kelty, V. J. Brown, **M. Domanico**, R. Reader, L. S. Van Winkle, and X. Ding. 2023. Role of Cytochrome P450-Mediated Bioactivation in Tobacco Smoke-Induced Lung Carcinogenesis in Mice. Abstract #3163. Poster Presentation at the Society of Toxicology (SOT) 62nd Annual Meeting and ToxExpo. March 19-23, 2023. Nashville, TN.

Domanico, M., C.R. Klocke, H.K. Panesar, L.M. Tran, P.C. Edwards, P.J. Lein, and L.S. Van Winkle. 2022. Effects of Developmental 3,3'-Dichlorobiphenyl (PCB 11) Exposure on Lung Maturation. Abstract #3543. Poster Presentation at the Society of Toxicology (SOT) 61st Annual Meeting and ToxExpo. March 27-31, 2022. San Diego, CA.

Domanico, M.C., L.M. Tran, J.M. Bustamante, K.J. Mo, P.C. Edwards, S.M. Thomasy, K.E. Pinkerton, and L.S. Van Winkle. 2021. Differences in Lung Cell Type Susceptibility to Engineered Nanomaterials. Abstract #2834. Poster Presentation at the Society of Toxicology (SOT) Virtual Annual Meeting and ToxExpo. March 12-26, 2021. Virtual.

Presentations

Domanico, M.C., R.J. Wilson, N.C. Stevens, H. Park, R. Mendieta, C.R. Klocke, H.K. Panesar, L.M. Tran, D.P. Pillai, P.C. Edwards, P.J. Lein, and L.S. Van Winkle. 18 March 2025. Lung lipid abundance is altered by developmental exposure to 3,3'-dichlorobiphenyl (PCB 11). Society of Toxicology Annual Meeting and ToxExpo 2025. [Oral Presentation]

Domanico, M.C., N.M. Collette, E. Ubick, X. Ding, B.A. Buchholz, and L.S. Van Winkle. 22 May 2024. Naphthalene Forms DNA Adducts in Mouse Lung and Liver After Oral Exposure. PIC2024: The 18th International Congress on Combustion Byproducts and Health. [Oral Presentation]*

Domanico, M.C., C. Wallis, J.D. Martinez, A.S. Wexler, and L.S. Van Winkle. 20 May 2024. Wildland Urban Interface Smoke: A New Approach to Measure Toxicity from Emissions. PIC2024: The 18th International Congress on Combustion Byproducts and Health. [Poster]

Domanico, M.C., N.M. Collette, E. Ubick, X. Ding, B.A. Buchholz, and L.S. Van Winkle. 18 May 2024. Naphthalene-DNA Adducts Detected in Mouse Liver Following Acute Oral Exposure. American Society for Pharmacology and Experimental Therapeutics Annual Meeting 2024. [Oral Presentation][Poster Competition, May 16-18, 2024]*

Domanico, M.C., N.M. Collette, E. Ubick, X. Ding, B.A. Buchholz, and L.S. Van Winkle. 12 Mar 2024. DNA adducts detectable in lung after in vivo naphthalene exposure. Society of Toxicology Annual Meeting 2024. [Poster]

L.S. Van Winkle, **M.C. Domanico**, and J.D. Martinez. 12 July 2023. Wildland Urban Interface Fires – a new approach modeling exposure to understand toxicology. UC Davis Anatomy, Physiology, and Cell Biology Work-in-Progress Seminar Series. [Oral Presentation]

Domanico, M.C., S.A. Carratt, P.C. Edwards, X. Ding, B.A. Buchholz, and L. S. Van Winkle. 25 May 2023. Naphthalene-DNA Adducts Persist after 24 Hours in C57BL/6 Mouse Airway Explants. UC Davis Comprehensive Cancer Center 17th Spotlight on Early Career Investigators. [Oral Presentation]*

Domanico, M.C., S.A. Carratt, P.C. Edwards, X. Ding, B.A. Buchholz, and L. S. Van Winkle. 20 Mar 2023. Naphthalene-DNA Adducts Persist after 24 Hours in C57BL/6 Mouse Airway Explants. Society of Toxicology Annual Meeting 2023. [Poster]

Domanico, M., C.R. Klocke, H.K. Panesar, L.M. Tran, P.C. Edwards, P.J. Lein, and L.S. Van Winkle. 29 Mar 2022. Effects of Developmental 3,3'-Dichlorobiphenyl (PCB 11) Exposure on Lung Maturation. Society of Toxicology Annual Meeting 2022. [Poster]

Domanico, M.C., L.M. Tran, J.M. Bustamante, K.J. Mo, P.C. Edwards, S.M. Thomasy, K.E. Pinkerton, and L.S. Van Winkle. 23 Mar 2021. Differences in Cell-Type Susceptibility to Engineered Nanomaterials. Society of Toxicology Annual Meeting 2021. [Virtual Conference: Poster]

*Award-winning presentation