

David M. Lehmann, Ph.D.

Senior Toxicologist

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Professional Summary

Accomplished toxicologist with extensive expertise in human health and ecological risk assessment, toxicological evaluations, study design and validation, and regulatory compliance. Nearly two decades experience in academia, industry, and government, applying toxicology principles to environmental pollutants, alcohol and drugs, medical devices, and consumer products. Adept at interdisciplinary collaboration, and regulatory reporting for toxicological assessments. Extensive involvement in international regulatory committees and development and application of modern toxicology methodologies.

Experience & Expertise

- Toxicology & Ecotoxicology: Multidisciplinary experience includes respiratory and contact hypersensitivity reactions, immunosuppression, hematology, skin and eye irritation, cytotoxicity, and genotoxicity as well as the effects of insecticides on pollinator health;
- Toxicological Risk Assessment: Expertise in human health risk assessment (e.g., pesticides, metals, medical devices) including weight-of-evidence approaches to causation analysis (e.g., Bradford Hill criteria);
- Pharmacology and Cellular Mechanisms: Expertise in human pharmacology and drug-related signal transduction pathways;
- New Approach Methodologies (NAMs) & International Validation: Contributor to ICCVAM and OECD expert groups (i.e., skin sensitization, respiratory sensitization, immunotoxicology, skin/eye irritation), and other international peer-review groups;
- Experimental Study Design and Data Interpretation: Experience designing, conducting, and interpreting in vivo and in vitro toxicology studies, including those designed to satisfy regulatory requirements;
- Systematic Review & Evidence Mapping: Skilled in conducting literature searches, evaluating scientific data, and producing evidence maps and systematic reviews to support risk assessments;
- Scientific Writing & Communication: Excels at translating complex scientific concepts for lay audiences, undergraduate and graduate students, industry professionals, policymakers, and community stakeholders; and

Education/Certifications

Ph.D. degree, Laboratory of Dr. Harold Smith, University of Rochester School of Medicine and Dentistry, University of Rochester, Rochester, NY (2005)

M.S. degree, Laboratory of Dr. Harold Smith, University of Rochester School of Medicine and Dentistry, University of Rochester, Rochester, NY (2003)

B.S. degree, Biological Science, Colorado State University, Fort Collins, CO (2000)

- **Career Certificate**, Fundamentals of Immunology Specialization (Rice University; 2025)
- **Certification**, *DWI Detection & Standardized Field Sobriety Testing* (NHTSA; 2025)
- **Certification**, *Responsible Alcohol Seller/Server Program* (North Carolina Alcoholic Beverage Control; 2025)

Professional Experience

Intertox, Inc., Senior Toxicologist, Litigation Support, Expert Witness, & Risk Assessment, Raleigh, NC (2025 – present)¹

- Apply core toxicological principles to support technical investigations, scientific analyses, expert reports, and testimony related to environmental pollutants, alcohol and drugs, medical devices, and consumer products
- Assess potential health effects of human exposure to chemical contaminants in drinking and environmental water
- Perform toxicological evaluations of human exposure to combustion byproducts from jet engine oil in commercial aircraft cabin air as part of litigation support
- Investigate potential human health implications of chemical and/or textile exposures from airline uniforms
- Conduct toxicological evaluations to assess potential health risks associated with chemical residues and textiles associated with airline uniforms

¹ Dr. Lehmann works from an office located in Raleigh NC.

U.S. Environmental Protection Agency (2010 – 2025)

- Center for Public Health and Environmental Assessment, Health and Environmental Effects Assessment Division, U.S. Environmental Protection Agency, Research Triangle Park, NC

Senior Toxicologist; Risk Assessor (2019 – 2025)

- Provide toxicological expertise (e.g., allergic hypersensitivity, immunosuppression, hematology, genotoxicity, cancer) to the National Ambient Air Quality Standards (NAAQS) reviews for six criteria air pollutants (e.g., lead (Pb), oxides of nitrogen, and ozone)
- Apply my expertise in animal toxicology, new approach methodologies (NAMs), and risk assessment to conduct comprehensive reviews of toxicology datasets for new pesticides (under FIFRA) and fragrance-containing formulations (under TSCA)
- Reviewed draft scientific reports containing data for immunological endpoints
- Led and participated in large interdisciplinary project teams

Principal Investigator, Laboratory Research (2010 – 2019)

- Planned, strategized, developed, and executed in vivo and in vitro laboratory studies investigating adverse effects of chemicals on the immune system
- Developed animal models for assessing allergic hypersensitivity (contact and respiratory) and antigen presentation
- Designed, executed, and interpreted studies investigating the potential adverse effects of pesticide exposure on the health of bees (e.g., Hymenoptera: Apidea)
- Contributed to the development of standardized toxicity testing methodologies for social and solitary bees

TOXmann Medical Device Consulting, Principal Consultant, Raleigh, NC (2011 – 2012)

- Performed human health risk assessments on new product formulations, leachables/extractables, and impurities and degradation products to support product registration packages
- Evaluated implications of data derived from vivo models for specific toxicity endpoints

Bausch & Lomb, Inc., Senior Research Scientist, Rochester, NY (2008 – 2010)

- Oversaw the planning, strategy, development, and execution of regulatory guideline-driven toxicology studies to support global medical device registration
- Conducted CRO site visits to monitor study progress and, when necessary, problem solve
- Represented the toxicology function on multiple project teams
- Advised team members of the toxicology testing required to satisfy regulatory standards (e.g., FDA, EPA, MHLW, Health Canada, EU, LATAM)
- Performed human health risk assessments on new product formulations, leachables/extractables, and impurities and degradation products to support product registration packages
- Developed study protocols in accordance with International Organization for Standardization (ISO) guidelines, Food and Drug administration, the Environmental Protection Agency, and the OECD
- Coordinated activities with internal scientists and external contract research organization staff
- Carefully reviewed and communicated to management study results via written reports and orally
- Developed a working knowledge of fundamental toxicology studies including allergic hypersensitivity, cytotoxicity, systemic toxicity, ocular toxicity, and genotoxicity
- Reflecting resource availability, streamlined processes to improve efficiency including, for example, the development of a tiered approach to conducting risk assessments

University of Rochester School of Medicine and Dentistry, Postdoctoral Fellow, Laboratory of Dr. Alan Smrcka, Rochester, NY (2005 – 2007)

- Applied my knowledge of signal transduction pathways, including G protein coupled receptors (e.g., opioid receptors), in combination with high throughput screening strategies to identify and characterize small molecule inhibitors of inflammation

University of Rochester School of Medicine and Dentistry, Doctoral Candidate, Laboratory of Dr. Harold Smith, Rochester, NY (2005)

- Conducted research on the effects of ethyl alcohol on liver metabolism, RNA processing, and toxicity using a combination of in vivo and in vitro models. The results of this research were compiled into a defensible thesis and peer-reviewed publications

Center for Environmental Toxicology and Technology, Colorado State University, Bench Scientist, Fort Collins, CO (1999 – 2000)

- Investigated cytotoxicity of polycyclic aromatic hydrocarbons as part of a larger effort to better understand the toxicology of complex chemical mixtures through development of physiological based pharmacokinetic models

Bibliography (<https://orcid.org/0000-0003-0174-344X>):

Peer-reviewed Publications:

41. Mizumachi H, Watanabe M, Ikezumi M, Kajiwara M, Yasuda M, Mizuno M, Imai N, Sakuma M, Shibata M, Watanabe S, Motoyama J, Basketter D, Eskes C, Hoffmann S, **Lehmann DM**, Ashikaga T, Sozu T, Takeyoshi M, Suzuki S, Miyazawa M, Kojima H. (2023). *The inter-laboratory validation study of EpiSensA for predicting skin sensitization potential*. J Appl Tox. 44(4):1-16. doi:10.1002/jat.4559.
40. Hester KP, Stoner KA, Eitzer BD, Koethe RW, **Lehmann DM**. (2023). *Pesticide residues in honey bee (Apis mellifera) pollen collected in two ornamental plant nurseries in Connecticut: Implications for bee health and risk assessment*. Environ Pollut. 333:122037. doi: 10.1016/j.envpol.2023.122037.
39. Evans E, Strange JP, Sadd BM, Colla SR, Tripodi AD, Figueroa LL, Davies Adams L, Colla SR, Duennes M, **Lehmann DM**, Moylett H, Richardson L, Smith JW, Smith TA, Spevak, EM, Inouye DW. (2023). *Parasites, parasitoids, and hive products that are potentially deleterious to wild and commercially raised bumble bees (Bombus spp.) in North America*. J Poll Ecol. 33(3):37-53. doi: 10.26786/1920-7603(2023)710.
38. Figueroa LL, Sadd BM, Tripodi AD, Strange JP, Colla SR, Davies Adams L, Duennes M, Evans E, **Lehmann DM**, Moylett H, Richardson L, Smith JW, Smith TA, Spevak, EM, Inouye DW. (2023). *Endosymbionts that threaten commercially raised and wild bumble bees (Bombus spp.)*. J Poll Ecol. 33(2):14-36. doi: 10.26786/1920-7603(2023)713.
37. Strange JP, Colla SR, Davies Adams L, Duennes M, Evans E, Figueroa LL, **Lehmann DM**, Moylett H, Richardson L, Sadd BM, Smith JW, Smith TA, Tripodi AD, Inouye DW. (2023). *An evidence-based rationale for a North American commercial bumble bee clean stock certification program*. J Poll Ecol. 33(1):1-13. doi: 10.26786/1920-7603(2023)721.
36. Hester K, Kirrane E, Anderson T, Kulikowski N, Simmons JE, **Lehmann DM**. (2022). *Environmental exposure to metals and the development of tauopathies, synucleinopathies, and TDP-43 proteinopathies: A systematic evidence map protocol*. Environ Int. 169:107528. doi: 10.1016/j.envint.2022.107528.
35. **Lehmann DM**, Armstrong MD, Williams WC, Postigo C, Simmons JE. (2022). *Assessing the skin irritation and sensitizing potential of concentrates of water chlorinated in the presence of iodinated X-ray contrast media*. Toxicology. 480:153335. doi: 10.1016/j.tox.2022.153335.
34. Stoner KA, Nurse A, Koethe R, Hatala MS, **Lehmann DM**. (2022). *Where does honey bee pollen come from? A study of pollen collected from colonies at ornamental plant nurseries*. Insects. 13(8), 744. doi: 10.3390/insects13080744.
33. **Lehmann DM**. (2022). *Protocol for initiating and monitoring bumble bee microcolonies with Bombus impatiens (Hymenoptera: Apidae)*. Bio protoc. 12(12):e4451-e4451. doi: 10.21769/BioProtoc.445.
32. Weitekamp C, Koethe RW, **Lehmann DM**. (2022). *A comparison of pollen and syrup exposure routes in Bombus impatiens microcolonies: implications for pesticide risk assessment*. Environ Entomol. 51(3):613-620. doi.: 10.1093/ee/nvac026.

31. **Lehmann DM**, Camp AA. (2021). *A systematic scoping review of the effects of pesticide exposure on solitary bees*. PLoS One. 6(5):e0251197. doi: 10.1371/journal.pone.0251197.
30. Camp AA, **Lehmann DM**. (2021). *Impacts of neonicotinoid pesticides on the bumble bees *Bombus terrestris* and *Bombus impatiens* examined through an AOP framework lens*. Environ Toxicol Chem. 40(2):309-322. doi: 10.1002/etc.4939.
29. Camp AA, Williams WC, Eitzer BD, Koethe RW, **Lehmann DM**. (2020). *Effects of the neonicotinoid acetamiprid in syrup on *Bombus impatiens* (Hymenoptera: Apidae) microcolony development*. PLoS One. 15(10):e0241111. doi: 10.1371/journal.pone.0241111.
28. Camp AA, Batres MA, Williams WC, Koethe R, Stoner KA, **Lehmann DM**. (2020). *Effects of the neonicotinoid acetamiprid in pollen on *Bombus impatiens* microcolony development*. Environ Toxicol Chem. 39(12):2560-2569. doi: 10.1002/etc.4886.
27. Belsky JE, Camp AA, **Lehmann DM**. (2020). *The importance of males to bumble bee (*Bombus* species) nest development and colony viability*. Insects. 11(8):506. doi: 10.3390/insects11080506.
26. **Lehmann DM**, Williams WC. (2020). *Physiological responses to cisplatin using a mouse hypersensitivity model*. Inhal Toxicol. 32(2):68-78. doi: 10.1080/08958378.2020.1737762.
25. Camp AA, Batres MA, Williams WC, **Lehmann DM**. (2020). *Impact of diflubenzuron on *Bombus impatiens* microcolony development*. Environ Entomol. 49(1):203-210. doi: 10.1093/ee/nvz150.
24. Strickland J, Daniel AB, Allen D, Aguila C, Ahir S, Bancos S, Craig E, Germolec D, Ghosh C, Hudson NL, Jacobs A, **Lehmann DM**, Matheson J, Reinke EN, Sadrieh N, Vukmanovic S, Kleinstreuer N. (2019). *Skin sensitization testing needs and data uses by US regulatory and research agencies*. Arch Toxicol. 93(2):273-291. doi: 10.1007/s00204-018-2341-6.
23. Gradish AE, van der Steen S, Scott-Dupree CD, Cabrera AR, Cutler GC, Goulson D, Klein O, **Lehmann DM**, Lückmann J, O'Neill B, Raine NE, Sharma B, Thompson H. (2019). *Comparison of pesticide exposure in honey bees (Hymenoptera: Apidae) and bumble bees (Hymenoptera: Apidae): Implications for risk assessments*. Environ Entomol. 48(1):12-21. doi: 10.1093/ee/nvy168.
22. **Lehmann DM**, Krishnakumar K, Batres MA, Hakola-Pary A, Cocketin N, Harry E, Carter DA. (2019). *A cost-effective colorimetric assay for quantifying hydrogen peroxide in honey*. Access Microbiol. 1:1-8. doi: 10.1099/acmi.0.000065.
21. Klinger EG, Camp AA, Strange JP, Cox-Foster D, **Lehmann DM**. (2019). **Bombus* (Hymenoptera: Apidae) microcolonies as a tool for biological understanding and pesticide risk assessment*. Environ Entomol. 2019. 48(6):1249-1259. doi: 10.1093/ee/nvz117.
20. **Lehmann DM**, Williams WC. (2018). *Cross-reactivity between halogenated platinum salts in an immediate-type respiratory hypersensitivity model*. Inhal Toxicol. 30(11-12):472-481. doi: 10.1080/08958378.2018.1554015.
19. **Lehmann DM**, Williams WC. (2018). *Development and utilization of a novel *In vitro* co-culture immunosuppression model for screening immunotoxicants*. Toxicol in Vitro. 53:20-28. doi: 10.1016/j.tiv.2018.06.025.

18. Zang Q, Paris M, **Lehmann DM**, Bell S, Kleinstreuer N, Allen D, Matheson J, Jacobs A, Casey W, Strickland J. (2017). *Prediction of skin sensitization potency using machine learning approaches*. J Appl Tox. 37(7):792-805. doi: 10.1002/jat.3424.
17. Strickland J, Zang Q, Paris M, **Lehmann DM**, Allen D, Choksi N, Matheson J, Jacobs A, Casey W, Kleinstreuer N. (2017). *Multivariate models for prediction of human skin sensitization hazard*. J Appl Tox. 37(3):347-360. doi: 10.1002/jat.3366.
16. Strickland J, Zang Q, Kleinstreuer N, Paris M, **Lehmann DM**, Choksi N, Matheson J, Jacobs A, Lowit A, Allen D, Casey W. (2016). *Integrated decision strategies for skin sensitization hazard*. J Appl Tox. 36(9):1150-1162. doi: 10.1002/jat.3281.
15. Williams WC, Copeland C, Boykin E, **Lehmann DM**. (2015). *Lung function changes in mice sensitized to ammonium hexachloroplatinate*. Inhal Tox. 27(10):468-480. doi: 10.3109/08958378.2015.1070219.
14. Williams WC, Copeland C, Boykin E, Quell SJ, **Lehmann DM**. (2015). *Development and utilization of an ex vivo BrdU local lymph node assay (LLNA) protocol for assessing potential chemical sensitizers*. J Appl Tox. 35:29-40. doi: 10.1002/jat.2983.
13. Surve CR, **Lehmann D**, Smrcka AV. (2014). *A chemical biology approach demonstrates GTP-binding protein G beta/gamma subunits are sufficient to mediate directional neutrophil chemotaxis*. J Biol Chem. 289(25):17791-17801. doi: 10.1074/jbc.M114.576827.
12. **Lehmann DM**, Cavet M, Richardson ME. (2010). *Nonclinical safety evaluation of boric acid and a borate-buffered vision care multipurpose solution*. Cont Lens Anterior Eye. 33(S1): S24-32. doi: 10.1016/j.clae.2010.06.010.
11. **Lehmann DM** and Richardson ME. (2010). *Impact of assay selection and study design on the outcome of cytotoxicity testing of medical devices: The Case of Multi-Purpose Vision Care Solutions*. Toxicol in Vitro. 24(4):1306-1313. doi: 10.1016/j.tiv.2010.02.018.
10. Bianchi E, **Lehmann D**, Vivoli E, Nocini M, Ghelardini C. (2010). *Involvement of PLCbeta3 in the effect of morphine on retrieval in passive avoidance task*. J. Psychopharmacol. 24(6):891-896. doi: 10.1177/0269881108102013.
9. Wang Z, Kumamoto Y, Wang P, Gan X, **Lehmann D**, Smrcka AV, Cohn L, Iwasaki A, Li L, Wu D. (2009). *Regulation of immature dendritic cell migration by a RhoA guanine nucleotide exchange factor ARHGEF5*. J Biol Chem. 284(42):28599-28606. doi: 10.1074/jbc.M109.047282.
8. Smrcka AV, **Lehmann DM**, Dessal AL. (2008). *G Protein beta gamma subunits as targets for small molecule therapeutic development*. Comb Chem High Throughput Screen. 11(5):382-395. doi: 10.2174/138620708784534761.
7. **Lehmann DM**, Seneviratne AM, Smrcka AV. (2008). *Small molecule disruption of G protein beta gamma subunit signaling inhibits neutrophil chemotaxis and inflammation*. Mol Pharmacol. 73(2):410-418. doi: 10.1124/mol.107.041780.
6. **Lehmann DM**, Yuan C, Smrcka AV. (2007). *Analysis and pharmacological targeting of phospholipase C beta interactions with G proteins*. Methods Enzymol. 434:29-48. doi: 10.1016/S0076-6879(07)34003-2.

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4. **Lehmann, DM**, Galloway CA, Sowden MP, Smith HC. (2006). *Metabolic regulation of ApoB mRNA editing is associated with phosphorylation of APOBEC-1 complementation factor*. *Nucleic Acids Res.* 34(11):3299-3308. doi: 10.1093/nar/gkl417.
3. Bonnacci, TM, Mathews JL, Yuan CJ, **Lehmann DM**, Malik S, Wu D, Font JL, Bidlack JM, Smrcka AV. (2006). *Differential targeting of G beta gamma subunit signaling with small molecules*. *Science.* 312(5772):443-446. doi: 10.1126/science.1120378.
2. Sowden, MP, **Lehmann DM**, Lin X, Smith CO, Smith HC. (2004). *Identification of novel alternative splice variants of APOBEC-1 complementation factor with different capacities to support ApoB mRNA editing*. *J Biol Chem.* 279(1):197-206. doi: 10.1074/jbc.M307920200.
1. **Lehmann, D.** (1997). *Controlled tests to determine if European starlings can pass through various hole sizes*. *Sialia.* 19(4):125-131.

Book Chapters, Conferences, Proceedings, Monographs:

6. Carlson LM, Kramek N, **Lehmann DM**, Thomas K, Owen S, Maddaloni M, Ginsberg G, Poulson M, Rajan P, Kapraun, DF, Foster S, Lehmann GM. (2023). *Risk Assessment, Risk Management, and Regulation of Halogenated Organic Chemicals: Current Practice and Future Directions*. In: Kodavanti PRS, Aschner M, Costa LG. *Advances in Neurotoxicology*. Academic Press, doi: 10.1016/bs.ant.2023.07.001.
5. *Strange JP, Colla SR, Duennes M, Evans E, Figueroa LL, Inouye DW, **Lehmann DM**, Moylett H, Richardson L, Sadd B, Smith JW, Tripodi AD, Davies Adams, L. (2022). *Developing a commercial bumble bee clean stock certification program: A white paper by members of the North American Pollinator Protection Campaign Bombus Task Force*. Pollinator Partnership. San Francisco, CA. <https://www.pollinator.org/nappc/imperiled-bombus-conservation>
4. *Boyle NK, Pitts-Singer TL, Abbott J, Alix A, Cox-Foster DL, Hinarejos S, **Lehmann DM**, Morandin L, O'Neill B, Raine NE, Singh R, Thompson HM, Williams NM, Steeger T. (2019). *Workshop on pesticide exposure assessment paradigm for non-Apis bees: Foundation and summaries*. *Environ Entomol.* 48(1):4-11. doi: 10.1093/ee/nvy103.
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2. ***Lehmann DM**. (2018). *Use of the LLNA:BrdU-ELISA for skin sensitization hazard assessment*. In: DeWitt J., Rockwell C., Bowman C. (Eds). *Immunotoxicity Testing. Methods in Molecular Biology*, 2nd edn. Humana Press, New York, NY. doi: 10.1007/978-1-4939-8549-4_8.
1. ***Lehmann DM**, Williams MA. (2012). *Asthma and respiratory allergic disease*. In: Dietert RR and Luebke R. Dietert (Ed.). *Immunotoxicity, Immunotoxicity, and Chronic Disease*, 1st edn. Springer, New York, NY. doi: 10.1007/978-1-61779-812-2.

*Subjected to peer review prior to publication

Influential Scientific Reports

14. *Integrated Science Assessment (ISA) for Oxides of Nitrogen – Health Review*. U.S. Environmental Protection Agency, Washington, DC. *Draft released*.
Note: Served as lead scientist for the Cancer chapter and as a co-author for the short-term and long-term respiratory chapters as well as the Health Effects with Limited Evidence chapter.
13. Office for Economic Cooperation and Development. (2025). Guideline No. 497. Defined Approaches on Skin Sensitization.
https://www.oecd.org/content/dam/oecd/en/publications/reports/2023/07/guideline-no-497-defined-approaches-on-skin-sensitisation_30b1718f/b92879a4-en.pdf.
12. European Commission: Joint Research Centre, Clewell, R., Corsini, E., Greco, D., Kienhuis, A., **Lehmann, D.**, Rodriguez, B., Segner, H., and Tralau, T., *ESAC Opinion on the Scientific Validity of the RS Comet and RSMN Test Methods*, MENNECOZZI, M., CORVI, R., and BARROSO, J. editor(s), Publications Office of the European Union, Luxembourg, 2025, https://data.europa.eu/doi/10.2760/2520536_JRC140306.
11. *Integrated Review Plan for the Primary National Ambient Air Quality Standards for Ozone and Related Photochemical Oxidants. Volume 2: Planning for the Review and the Integrated Science Assessment*. U.S. Environmental Protection Agency, Research Triangle Park, NC. EPA-452/R-24-001b.
10. *Proceedings for the Ozone National Ambient Air Quality Standards Science and Policy Workshop*. U.S. Environmental Protection Agency, Research Triangle Park, NC, EPA/600/R-24/252.
9. *IRIS Toxicological Review of Hexavalent Chromium (Final Report, August 2024). Immune Effects*. U.S. Environmental Protection Agency, Washington, DC. EPA/635/R-24/164Fa.
8. *Integrated Review Plan for the Planning for the National Ambient Air Quality Standards for Oxides of Nitrogen. Volume 2: Planning for the Review and the Integrated Science Assessment (March 2024)*. U.S. Environmental Protection Agency, Research Triangle Park, NC, EPA-452/R-24-010b.
7. *Integrated Science Assessment (ISA) for Lead (Final Report, Jan 2024)*. U.S. Environmental Protection Agency, Washington, DC. EPA/600R-23/375.
Note: Served as lead scientist for the *Immune Effects and Hematology* chapters.
6. *Electrophilic Allergen Screening Assay (EASA)*. NTP Interagency Center for the Evaluation of Alternative Methods (NCEATM) Validation Study Report. November 2023.
5. *Workshop on Operational and Financial Aspects of Methods Validation (November 2023)*. Series on Testing and Assessment No. 399. OECD Publishing, Paris.
https://www.oecd.org/en/publications/workshop-report-on-operational-and-financial-aspects-of-validation_db9979eb-en.html
4. *Epidermal Sensitization Assay (EpiSensA): JaCVAM Validation Study Report*. JaCVAM (September 2022). https://www.jacvam.jp/files/list/05/EpiSensA_Validation%20report.pdf
3. FY17 RARE Final Project Update R01. Project #1806 (Final Report, October 2020). *Coupling Neonicotinoid Exposure Assessment in a Plant Nursery Setting to Colony Condition and Health in Bumble Bees (Bombus impatiens)*.

2. *Integrated Science Assessment (ISA) for Ozone and Related Photochemical Oxidants* (Final Report, April 2020). Appendix 8: Ecological Effects of Ozone; Herbivores: Growth, Reproduction, and Survival. U.S. Environmental Protection Agency, Washington, DC, EPA/600/R-20/012, 2020.

Note: The 2020 Ozone ISA was the first to include a causality determination for ozone exposure and effects on herbivores.

1. *Integrated Science Assessment (ISA) for Ozone and Related Photochemical Oxidants* (Final Report, Apr 2020). Appendix 8: Ecological Effects of Ozone; Plant-insect Signaling. U.S. Environmental Protection Agency, Washington, DC, EPA/600/R-20/012, 2020.

Research Awards

2016 – 2020	Regionally Applied Research Effort (RARE) with EPA Region 1 <i>Coupling Neonicotinoid Exposure Assessment in a Plant Nursery Setting to Colony Condition and Health in Bumble Bees (Bombus impatiens)</i> , \$150k
2015	Pathfinder Innovation Project 5 Stage 1 awardee <i>Make a Beeline to a Sustainable Future</i> , \$21k
2015	One of only two winners of the inaugural NHEERL Citizen Science Competition for the project <i>Show Me the Honey</i> , \$70k
2014	Pathfinder Innovation Projects 2 Stage 1 awardee <i>Developing Immunotoxicology Testing for the 21st Century</i> , \$20k
2006 – 2007	Arthritis Foundation Postdoctoral Fellow (transferable, 3 years) awardee <i>Small Molecule Targeting of G beta/gamma Subunits as a Therapeutic Strategy</i> , \$150k
2005 – 2006	Postdoctoral Fellow, NIH Cancer Center Training Grant (T32CA09363)
2002 – 2005	Student Fellow, NIH Toxicology Training Grant (5T32ESO7026)
2002	Sigma Xi Grants-in-Aid of Research recipient awardee <i>Ethanol Regulates the Subcellular Distribution of Proteins in the Liver Involved in Messenger RNA Processing</i> , \$5k
2002	American Liver Foundation Student Fellowship Awardee <i>The Role of Alcohol in Diversifying Liver Function</i> , \$2.5k

Honors, Awards, and Recognition (selected)

Human Health and Environmental Assessment:

2024	CPHEA Team Award for <i>Outstanding Scientific Collaborations Supporting Critical Agency Activities</i> for my contributions to the 2024 ISA for Lead
2023	HEEAD Team Award for supporting the development of the NASEM Causality Study consensus report

2021 **CPHEA Team Award** for *Outstanding Scientific Collaborations Supporting Critical Agency Activities* for my contributions to the 2020 ISA for Ozone and Related Photochemical Oxidants

Pollinator Research:

2021 **ORD Bronze Medal Award** (individual, the 3rd highest honor awarded by EPA) in recognition of the impact of my pollinator research

2021 EPA Region 01 Regionally Applied Research Effort (RARE) project *Coupling Neonicotinoid Exposure Assessment in a Plant Nursery Setting to Colony Condition and Health in Bumble Bees (Bombus impatiens)*, named a “**State Success Story**” by EPA’s Office of Research and Development

2021 **Environmental Entomology People’s Choice Award** (first runner-up) for the paper entitled “*Bombus (Hymenoptera: Apidae) microcolonies as a tool for biological understanding and pesticide risk assessment*”

2017 Recognized as an **ORD Program Support Standout** for exceptional service and contributions to the *Preliminary Bee Risk Assessments – Clothianidin, Thiamethoxam, and Dinotefuran*

Other Areas of Recognition:

2007 Travel Award: Arthritis Foundation 2007 Annual Meeting

2004 Travel Award: RNA Society 2004 9th Annual Meeting

1994 Nominated by local American Legion to attend Boys State (New York; Nominated by local American Legion Post)

Committee and Consultant Appointments

2024 Panelist during the *Oxides of Nitrogen ISA Peer Input Workshop* (September 16, 2024).

2023 Panelist during the *Clean Air Scientific Advisory Committee (CASAC) Lead Review Panel Public Meeting* (April 11, 2023).

2023 – present Nominated to join OECD Expert Group on Respiratory Sensitization

2022 – present Selected to join EU Reference Laboratory for Alternatives to Animal Testing (EURL ECVAM) Scientific Advisory Committee (ESAC), 5-year appointment

2022 – 2023 Invited subject matter expert: *National Native Bee Monitoring Research Coordination Network* workshops

2022 Invited subject matter expert: *Current Advances in Developmental Immunology and Implications for Developmental Immunotoxicity Testing* workshop (2022)

2021 Invited subject matter expert: *The Identification of Key Molecular and Biological Events for Alternative Developmental Immunotoxicity Testing* workshop (2021)

- 2020 – 2023 Elected officer of the Executive Committee (i.e., Secretary) for the Research Triangle Chapter of the Society for Risk Analysis (RT-SRA)
- 2020 – present Invited to join OECD Expert Group on In Vitro Immunotoxicity
- 2020 – present Invited to join OECD Expert Group on Eye Irritation and Skin Irritation/Corrosion Test Methods
- 2018 – 2023 Nominated to join the Japanese Center for the Validation of Alternative Methods (JaCVAM) EpiSensA Validation Management Team
- 2017 Invited subject matter expert: *Exposure Assessment Paradigm for non-Apis Bees* workshop hosted by EPA's Office of Pesticide Program's Environmental Fate and Effects Division
- 2015 – present Nominated to join the OECD Expert Group on Skin Sensitization
- 2015 – present International Commission for Plant-Pollinator Relationships / OECD Non-Apis Bee Working Group member
- 2015 – present North American Pollinator Protection Campaign (NAPPC) Bumble Bee Workgroup member
- 2012 – present Nominated to represent EPA on the ICCVAM Skin Sensitization Working Group
- 2008 – 2014 Society of Toxicology
- Ecotoxicology* poster session chairperson at the Society of Toxicology 60th Annual Meeting (2021)
- Expanding Beyond the Honey Bee – Novel Approaches for Advancing Risk Assessment for Non-Apis Bees* session co-chair at the Society of Environmental Toxicology and Chemistry 38th Annual Meeting (2017)
- Regulatory and Safety Evaluation Specialty Section: Committee member (2014)
- Hypersensitivity Methods* platform session co-chair at the Society of Toxicology 51st Annual Meeting (2012)
- Safety Assessment for Non-pharmaceuticals* poster session chairperson at the Society of Toxicology 48th Annual Meeting (2009)
- Ocular Toxicology Specialty Section: Councilor (2008 – 2010)

Editorial Appointments and Peer-Review

Grant Review, International and National:

- 2024 FDA invited me to serve as an expert reviewer for a grant proposal describing an approach for evaluating mixtures and nanoparticles for skin sensitization potential using new approach methods

- 2023 Poland's *National Science Centre* invited me to join their Fundamentals of Applied Life Sciences and Biotechnology grant review panel to review pollinator research grants
- 2023 Hungary's *National Research, Development, and Innovation Office* invited me to join their research pollinator grant review board
- 2023 – present North American Pollinator Protection Campaign (NAPPC) Imperiled Bombus Conservation Task Force member of research grant review board

Editorial Boards:

- 2025 – present Associate Editor for the journal *Toxicological Sciences*
- 2020 – present Academic Editor for the journal *PLoS One*
- 2020 – 2024 Editorial Board member for the journal *Toxicological Sciences*

Ad hoc Peer Reviewer:

- ALTEX
- Apidologie
- Toxicology
- Insects
- Biology
- JoVE
- Chemosphere
- PLoS One
- Toxicology Reports
- Journal of Immunotoxicology
- Toxicological Sciences
- Economic Entomology
- Frontiers in Insect Science
- Environmental Pollution
- Environmental Entomology
- Applied in Vitro Toxicology
- Journal of Applied Toxicology
- Environmental Health Perspectives
- Food and Chemical Toxicology
- Science of the Total Environment
- Environmental Science and Ecotechnology
- Journal of Pharmacology and Toxicological Methods
- Environment International
- Current Opinion in Toxicology
- Regulatory Toxicology and Pharmacology

Teaching Positions

Course Instructor:

- 2026 MyLawCLE
Instructor: The Science of Alcohol Intoxication (2 CLE credits)

Guest Lecturer:

- 2025 – TOX411/511 Fundamentals of Toxicology, Oregon State University, Environmental and Molecular Toxicology
Guest lecturer: Alcohol toxicology
- 2016 – 2019 TOXC 707 Advanced Toxicology, University of North Carolina Chapel Hill, Curriculum in Toxicology

- 2018 – 2018 *Guest lecturer:* Allergic hypersensitivity
 PHARM 554 Mammalian Toxicology, Duke University, Department of Pharmacology
- 2011 – 2012 *Guest lecturer:* Immunotoxicology
 TOX 701 Fundamentals of Toxicology, North Carolina State University, Department of Environmental & Molecular Toxicology
- 2008 *Guest lecturer:* Immunotoxicology (2-part lecture series)
 TOX 521 Toxicology I, University of Rochester, Department of Environmental Medicine
- Guest lecturer:* Biocompatibility testing and risk assessment

Adjunct Professor:

- 2007 BIO 495 Cell Signaling, SUNY Brockport, Department of Biological Sciences
Adjunct assistant professor: Designed a course on major mechanisms by which cells communicate with the environment by sending and receiving signals (e.g., opioid receptors). Delivered lectures to undergraduate and graduate-level students (12 students, 3 credit hours)
- 2006 CHEM 201L & 202L, Organic Chemistry Lab, St. John Fisher College, Chemistry Department
Adjunct assistant professor: Reinforced course concepts and promoted student engagement through completion of laboratory exercises (15 students, 2 credit hours/course)

Invited Seminars & Presentations

29. **Lehmann DM.** (2024). *Peer Input Workshop for Initial Draft Materials from the Oxides of Nitrogen Integrated Science Assessment.* Presented during the Oxides of Nitrogen ISA Peer Input Workshop. RTP, NC; October 2024.
28. **Lehmann DM.** (2024). *Peer Input Workshop for Initial Draft Materials from the Oxides of Nitrogen Integrated Science Assessment. Pre-workshop Orientation: Atmospheric Science and Exposure & Dosimetry.* Presented during the Clean Air Scientific Advisory Committee (CASAC) Lead Review Panel Public Meeting. RTP, NC; September 16, 2024.
27. **Lehmann DM.** (2024). *Peer Input Workshop for Initial Draft Materials from the Oxides of Nitrogen Integrated Science Assessment.* Presented during the Oxides of Nitrogen ISA Pre-Workshop Webinar. RTP, NC; September – October 2024.
26. **Lehmann DM,** Cabrera AR, Exeler N, Hanewald N, Zicot A, Soler E, Kling A, Vinall S, Dressler K, Chwiesko D, Kimmel S, Patnaude M. *Development and Validation of an Adult Bumble Bee 10-day Chronic Oral Toxicity Test.* Presented to the American Chemical Society Fall 2024 Meeting; Denver, CO; August 21, 2024.

25. **Lehmann DM.** *Integrated Science Assessment Development – Health Criteria.* Presented to the Energy Foundation China delegation (site visit, EPA); RTP, NC; April 17, 2024.
24. **Lehmann DM.** (2024). *Planning for the Review of Health Effects Evidence - Emerging Evidence and Interpretation.* Presented during the Ozone National Ambient Air Quality Standards Review Kickoff Workshop. RTP, NC; May 2024.
23. **Lehmann DM.** (2024). *Integrated Review Plan for Review of the Primary National Ambient Air Quality Standards for Oxides of Nitrogen, Volume 2: Planning for the Review and the Integrated Science Assessment.* Presented to the Clean Air Scientific Advisory Committee Oxides of Nitrogen Panel. RTP, NC; April 2024.
22. **Lehmann DM,** Hester KP, Stoner KA, Eitzer BD, Koethe RW. (2023). *Origin and Pesticide Content of Pollen Collected by Honey Bees in Two Ornamental Plant Nurseries in Connecticut: Implications for Bee Health and Risk Assessment.* Presented to the American Chemical Society Fall 2023 Meeting; San Francisco, CA; August 14, 2023.
21. **Lehmann DM.** (2021). *Characterizing the Effects of Pollen Collected by Honey Bees Housed at New England Plant Nurseries on Bumble Bee Microcolony Growth and Productivity.* Presented to EPA’s Region 1. RTP, NC; July 21, 2021.
20. **Lehmann DM.** (2020). *Effects of Pesticide Exposure on Bumble Bee Health, Immunocompetence and Drone Fitness.* Presented to EPA’s Center for Public Health and Environmental Assessment. RTP, NC; November 16, 2020.
19. **Lehmann DM.** (2018). *Coupling Pesticide Exposure Assessment in a Plant Nursery Setting to Direct Measures of Immunocompetence and Colony Condition in Bumble Bees.* EPA Region 1, Regional Science Council; March 29, 2018.
18. **Lehmann DM.** (2018). Delivered presentation entitled *Establishing the Bumble Bee Microcolony Model for Use at the EPA.* Presented to EPA’s Office of Pesticide Programs, Environmental Fate and Effects Division. Arlington, VA; October 19, 2018.
17. **Lehmann DM.** (2017). *Immunotoxicology and Pollinator Research.* EPA’s Office of Research and Development National Program Director for Chemistry for Safety and Sustainability. RTP, NC; October 19, 2018.
16. **Lehmann DM.** (2017). *HiveScience.* Presented to the Eastern Missouri Beekeepers Association; St. Louis, MO; September 13, 2017.
15. **Lehmann DM.** (2017). *Evaluating the Potential for Bumble Bee Micro-colonies to Inform Risk Assessment.* Presented to the Society of Environmental Toxicology and Chemistry 38th Annual Meeting; Minneapolis, MN; September 13, 2017.
14. **Lehmann DM.** (2017). *Assessing Risks of Pesticides on the Bee Immune System.* Presented to the American Chemical Society 254th Annual Meeting; Washington, DC; August 21, 2017.
13. **Lehmann DM.** (2017). *EPA’s HiveScience.* Presented to the 5 Counties Beekeepers Association; Zebulon, NC; May 17, 2016.
12. **Lehmann DM.** (2017). *EPA’s HiveScience: A Citizen Science Project for Beekeepers.* Presented to the National Advisory Council for Environmental Policy and Technology (NACEPT) (May 10, 2017).

11. **Lehmann DM.** (2017). *Honey Bees; Societal Impact and Population Trends*. Presented to the National Active and Retired Federal Employees Union; Raleigh, NC; May 2, 2017.
10. **Lehmann DM.** (2017). *Pollinator Research at EPA*. Presented to the National Institutes of Environmental Health, Earth Day Celebration; RTP, NC; April 21, 2017.
9. **Lehmann DM.** (2017). *HiveScience: A Citizen Science Project for Beekeepers*. Presented to the Eastern Missouri Beekeepers Association; Webinar; April 12, 2017.
8. **Lehmann DM.** (2017). *EPA's HiveScience*. Presented to the Johnston County Beekeepers Association; Smithfield, NC; March 21, 2016.
7. Castellon D, Daraseng F, Ibarra M, **Lehmann DM**, Yuen A. (2017). Extreme Programming: HiveScience. EPA Developers Guild, webinar; February 27, 2017.
6. **Lehmann DM.** (2017). *EPA's HiveScience: A Citizen Science Project for Beekeepers*. Presented to EPA's Office of Research and Development Office of the Assistant Administrator. RTP, NC; February 17, 2017.
5. **Lehmann DM.** (2016). *Advancing Pollinator Research at EPA: Early Steps and Dynamic Partnerships*. Presented to EPA's National Health and Environmental Research Laboratory Senior Management Team. RTP, NC; February 17, 2016.
4. **Lehmann DM.** (2015). *Immunotoxicology and Human Health Risk Assessment*. Presented to EPA's National Health and Environmental Research Laboratory Immediate Office. RTP, NC; June 23, 2015.
3. **Lehmann DM.** (2013). *Immunotoxicology*. Presented to EPA's National Health and Environmental Research Laboratory Associate Laboratory Director for Science. RTP, NC; March 4, 2013.
2. **Lehmann DM**, Smith HC. (2004). *Regulated Phosphorylation of APOBEC-1 Complementation Factor, ACF64 in the 27S Editosome*. Presented to the RNA Society 9th Annual Meeting; Madison, WI; June 1 – 6, 2004.
1. **Lehmann DM.** *Consumption and Sedative Effects of Ethanol: Role of Protein Kinase A*. Presented to the University of Rochester School of Medicine and Dentistry, Department of Environmental Medicine; Rochester, NY; 2002.

Professional Societies

2008 – present	Society of Toxicology (Full member) <ul style="list-style-type: none"> • Immunotoxicology Specialty Section (2025 – present) • Ethical Legal Forensics and Social Issues Specialty Section (2025 – present)
2001 – 2004	Society of Toxicology (Student member)

Mentorship

Mr. M. Hatala*	Oak Ridge Associated Universities Student Service Contractor (2022 – 2025)
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	<i>Current position</i> – Contractor with EPA Center for Public Health and Environmental Assessment
Dr. K. Hester*	R-authority postdoc (2021 – 2023) <i>Current position</i> – EPA Center for Public Health and Environmental Assessment
Mr. J. Belsky*	Pathways Program Recent Graduate (2019 – 2020) <i>Current position</i> – EPA Office of Pesticide Programs
Dr. A. Camp*	Oak Ridge Institute for Science and Education Participant (2019 – 2020) <i>Current position</i> – UNC Lineberger Comprehensive Cancer Center; Clinical Development Associate
M. Batres, MD*	Oak Ridge Associated Universities Student Services Contractor (2017 – 2018) <i>Current position</i> – Medical University of South Carolina, Resident, Obstetrics
Dr. P. Han	National Science Fellowship GRIP intern (2017) <i>Current position</i> – Wyss Institute at Harvard University; Research Fellow
Ms. J. Kalinowski	Oak Ridge Associated Universities Student Service Contractor (2016 – 2018) <i>Current position</i> – NC State Extension

*Published at least one first or co-author paper in a peer-reviewed scientific journal.

STEM and Public Outreach

2019	EPA's STEM in the Park ExternShip presentation: <i>Importance of Pollinators</i>
2019	NC Science Festival Tour and Research Update: pollinator presentation and lab tour
2019	EPA's High School Summer Workshop presentation: <i>Protecting Human Health in a Changing Environment</i> and speed mentoring
2019	EPA's Veteran's Career Fair: pollinator booth and tours of bee research lab
2019	EPA's Regional-ORD Community of Science Networking (ROCS-Net): ORD host
2019	EPA's International Visiting Leaders Program presentation: <i>Pollinators: Population Trends and EPA Response</i>
2017, 2019	Pleasant Union Elementary School STEM outreach presentation: <i>All About Pollinators</i>

Continuing Education

- Advancing Cannabis Safety Assessments with New Approach Methodologies (ASCCT; 2026)
- Early Warning Science: Drug Positivity Trends in 2025 and Beyond (2026)
- Defending Felony DUI Cases (SCACDL; 2025)
- Breath Testing (SCACDL; 2025)

- The Addicted Brain (Emory University; 2025)
- Disorders Due to Substance Use and Addictive Behaviors (American Psychological Association/PsycLearn; 2025)
- Impacting the Opioid Crisis: Prevention, Education, and Practice for Non-Prescribing Providers (University of Michigan; 2025)
- Prosecuting DUI Cases (National District Attorneys Association; 2025)
- Inside the State Crime Lab: Trace Evidence (IDS; 2025)
- Inside the State Crime Lab: Toxicology Testing Explained (IDS; 2025)
- Inside the State Crime Lab: Drug Chemistry Testing Explained (IDS; 2025)
- Stimulant Intoxication: Effects and Involvement in Cause and Manner of Death 2025 (CFSRE; 2025)
- Involvement of Synthetic Cannabinoids and Other Drugs Involved in Drug Overdose Deaths among Persons in Jail/Prison (CFSRE; 2025)
- Opioid Overdose Deaths in the Emergency Room: Naloxone and Other Interventions – Factors that Impact Emergency Care Outcomes (CFSRE; 2025)
- Ketamine – An Old Drug with New Uses, its Proliferation, and Potential for Involvement in Drug Deaths (CFSRE; 2025)
- Introduction to Forensic Science (Nanyang Technological University; 2025)
- Overdose Fatality Review Teams – Linking MDI to Public Health Outcomes (CFSRE; 2025)
- The Continuing Challenges of Resourcing Medicolegal Death Investigation in Rural and Under-Resourced Jurisdictions (CFSRE; 2025)
- 2024 Year in Review of Novel Psychoactive Substances involved Deaths (CFSRE; 2025)
- The Challenge of Investigation, Toxicological Analysis and Certification of Poly-Drug Deaths (CFSRE; 2025)
- The Current Status of Fentanyl and Novel Synthetic Opioid Deaths in The United States (CFSRE; 2025)
- Review of the Three-legged stool of Drug Death Investigation and Certification: Scene, Autopsy and Toxicology (CFSRE; 2025)
- Advancing NAMs for Skin Sensitization Testing: Natural Extracts, Medical Devices and Potency (NAMSA; 2025)
- Using Cell Phone Extraction Reports (IDS; 2025)
- U.S. EPA NAMs Conference: State of Science on Development and Use of NAMs for Chemical Safety Testing (EPA; 2024)
- Dose Response Core Training (EPA; 2024)

- Workshop: New Tools and Approaches to Support Decision-Making in Inhalation Toxicology (California EPA; 2024)
- Toxicokinetic Tools for Decision Making Using New Approach Methodologies Workshop (California EPA; 2023)
- Message Box for Risk Communication Workshop (Madeline Beale; 2023)
- Expert workshop: Skin Sensitization for Nanomaterials (Bundesamt für Gesundheit; 2021)
- R User Group Workshop (EPA; 2021)
- R for Research Scientists (BioTrac; 2021)
- Science Writing course (Judith Swan, Princeton University; 2020)
- Immunotoxicology Hazard Identification Using Novel In Vitro Methods (IUTOX; 2019)
- Science Communications Training with the Alan Alda Center for Communicating Science (2017)
- Pesticide Risk Assessment for Pollinators (SETAC; 2017)
- Quantitative In Vitro to In Vivo Extrapolation: The Essential Element of In Vitro Assay-Based Risk Assessment (SOT; 2011)
- Assessment of Ocular Toxicity in Toxicology Studies Conducted for Regulatory Purposes (SOT; 2010)
- Principles and Applications of Toxicokinetics (SOT; 2009)
- Operating a GLP Compliant Laboratory; A Comprehensive Course on GLPs (Webinar, Biologics Consulting Group Inc.; 2008)
- Developing a Biological Evaluation Program for Medical Devices (Newark, NJ; 2008)
- Introduction to Pathology for Toxicologists and Study Directors (SOT; 2008)
- Physiologically Based Pharmacokinetic Modeling Workshop (Fort Collins, CO; 1999)