HEIDI C. O'NEILL, PHD, DABT

FIELDS OF EXPERTISE

Neuropharmacology/Drugs of Abuse, Human Health Risk Assessment, Inhalation Toxicology, Neurotoxicology, Fiber Toxicology, Science Education and Communication.

EDUCATION/ CERTIFICATIONS

DABT- Diplomate of the American Board of Toxicology, 2023.

Ph.D., University of Colorado Health Sciences, 2010, Toxicology. Dissertation title: *Development of an inhalation model for 2-chloroethyl ethyl sulfide (CEES), a mustard gas analog, and the use of thiol/metalloporphyrin compounds to ameliorate injury in the rat.*

B.S., University of Colorado, 1999, Psychology. Honors Thesis*: Lithium alters measures of auditory gating in rodents.*

HAACP Certification, 2022

ServSafe Instructor Certification, 2021

ServSafe Alcohol Certification, 2024

CURRENT AND PREVIOUS POSITIONS

Senior Toxicologist, Intertox, Inc., Seattle, WA (2024-present).

Supervising Health Scientist, Stantec (Formerly Cardno ChemRisk), Denver, CO (2019-2024).

Postdoctoral Fellow, University of Colorado, Boulder, CO (2010-2019).

Research Assistant, University of Colorado, Denver, CO (2002-2010).

SELECTED PROJECT EXPERIENCE

Toxicologist experienced in conducting toxicological and human health risk assessments for exposure to chemical and biological agents in consumer products including vape products, alcohol, drugs of abuse, and food. Chemicals evaluated included flavoring ingredients, metals and other inorganic substances, nicotine, cannabis, and solvents.

Examples of relevant technical experience include:

- Analysis and technical reports of toxicological exposure to pesticides, volatile organic compounds, and PCBs. *Ongoing.*
- Technical investigations, analysis, reports, and testimony involving the application of fundamental principles of toxicology involving exposures to drugs including alcohol, cannabis, stimulants, and opiates. *Ongoing.*
- Developed a framework for premarket tobacco applications and evaluated flavoring ingredients, hazardous and potentially hazardous chemicals (HPHCs), extractables/

leachables, potential alternative dermal exposures, and microbial contamination in both vaping products and oral nicotine products. *2019- 2023.*

- Performed a risk assessment of terpene mixtures for potential use in cannabis vape products. *2021-2023*.
- Conducted toxicological assessments of human exposure to potential jet fuel contamination of ice cream in support of litigation. *Completed October 2023*.
- Conducted a human health risk assessment for potential inhalation exposures to asbestos in cosmetic talc and prepared a report in support of litigation. *Completed June 2023*.
- Evaluated potential human health risks associated with naturally occurring asbestos in El Dorado Hills, CA in support of litigation. *Completed June 2023*.
- Evaluated groups of chemically-related data-poor substances using various in silico tools to identify appropriate points of departure for inhalation, oral, and dermal exposure to derive maximum acceptable group levels (MAGLs). *2021-2023.*
- Developed a Go/No Go framework for industrial chemical mixture hazards as a component of an SDS decision making software platform using NIOSH hazard banding. *Completed 2022*.
- Assessed potential relationship between vape use and head and neck cancer in support of litigation. *Completed 2021.*
- Evaluation of behavioral, circadian rhythms, and biochemical measures following developmental nicotine exposure in genetically-altered mice across multiple generations. *Completed 2019*.
- Evaluated genetic and epigenetic mechanisms of *in utero* nicotine exposure *2013-2019.*
- Evaluated smoking cessation therapeutics *2010-2013.*
- Developed an inhalation model for mustard gas and a biomarker panel for nasal histopathology. *2008- 2010.*

TEACHING

University of Colorado, Health Sciences Center 2002-2003
- Biochemistry for pharmacy students
- Medicinal Chemistry

Regis University
- Introduction to Neuroscience

Front Range Community College
- General Biology
- Non-Majors Biology
- Environmental Science

PROFESSIONAL MEMBERSHIPS

- Society of Toxicology (Full Member since 2019; Student/Post-Doc Member 2004-2015)

PUBLICATIONS

Madl AM and **O'Neill HC** (2023). Fiber Biodurability and Biopersistence: Historical Toxicological Perspective of Synthetic Vitreous Fibers (SVFs), the Long Fiber Paradigm, and Implications for Advanced Materials. Crit Rev Tox, In Review.

Buck JM, **O'Neill HC**, Stitzel JA (2021). The intergenerational transmission of developmental nicotine exposure-induced neurodevelopmental disorder-like phenotypes is modulated by the Chrna5 D397N polymorphism in adolescent mice. Behav Genet, 51(6): 665-684.

Buck JM, **O'Neill HC**, Stitzel JA (2020). Developmental nicotine exposure engenders intergenerational downregulation and aberrant posttranslational modification of cardinal epigenetic factors in the frontal cortices, striata, and hippocampi of adolescent mice. Epigenetics Chromatin, 13(1):13. doi: 10.1186/s13072-020-00332-0.

Buck JM, **O'Neill HC**, Stitzel JA (2019). Developmental nicotine exposure elicits multigenerational disequilibria in proBDNF proteolysis and glucocorticoid signaling in the frontal cortices, striata, and hippocampi of adolescent mice. Biochem Pharmacol, 168:438-451. doi: 10.1016/j.bcp.2019.08.003.

Duncan, A, Heyer MP, Ishikawa M, Caligiuri S, Liu X, Chen Z, di Bonaventura MV, Ables JL, Howe WM, Williams M, Wang Z, Lu Q, Kamenecka TM, Ma'ayan A, **O'Neill HC,** Ibaniz-Tallon I, Geurts AM, and Kenny PJ (2019). Habenular Tcf7l2 links nicotine addiction to diabetes. Nature, 574(7778):372-377. doi: 10.1038/s41586-019-1653-x.

Buck JM, Sanders KN, Wageman CR, Knopik VS, Stitzel JA, **O'Neill HC** (2019). Developmental nicotine exposure precipitates multigenerational maternal transmission of nicotine preference and ADHD-like behavioral, rhythmometric, neuropharmacological, and epigenetic anomalies in adolescent mice. Neuropharmacology, 149:66-82. doi: 10.1016/j.neuropharm.2019.02.006.

Coverstone ED, Bach RG, Chen L, Bierut LJ, Li, AY, Lenzini PA, **O'Neill HC**, Spertus JA, Sucharov CC, Stitzel JA, Schilling JD, Cresci S (2018). A novel genetic marker of decreased inflammation and improved survival after acute myocardial infarction. Basic Res Cardiol. 113(5):38. doi: 10.1007/s00395-018-0697-7.

O'Neill HC, Wageman CR, Sherman SE, Grady SR, Marks MJ, Stitzel JA (2018). The interaction of the Chrna5 D398N variant with developmental nicotine exposure. Genes Brain Behav. doi: 10.1111/gbb.12474.

Parker RL, **O'Neill HC**, Henley BM, Wageman CR, Drenan RM, Marks MJ, Miwa JM, Grady SR, Lester HA (2017). Deletion of lynx1 reduces the function of α6* nicotinic receptors. PLoS One, 5;12(12): e0188715. doi:10.1371/journal.pone.0188715.

Koukouli F, Rooy M, Tziotis D, Sailor KA, **O'Neill HC**, Levenga J, Witte M, Nilges M, Changeux JP, Hoeffer CA, Stitzel JA, Gutkin BS, DiGrigorio DA, Maskos U (2017). Nicotine reverses hypofrontality in animal models of addiction and schizophrenia. Nat Med, 23(3): 347-54.

Marks MJ, **O'Neill HC**, Wynalda-Camozzi KM, Ortiz NC, Simmons EE, Short CA, Butt CM, McIntosh JM, Grady SR (2015). Chronic treatment with varenicline changes expression of four nAChR binding sites in mice. Neuropharmacology, 99:142-55.

O'Neill HC, Laverty DC, Patzlaff NE, Cohen BN, Fonck CN, Grady SR, Marks MJ (2013). Mice expressing the ADNFLE β2VL mutation display increased sensitivity to acute nicotine administration and altered nAChR-mediated function. Pharmacology Biochemistry & Behavior, 103(3): 603-21.

Mackey ED, Engle SE, Kim MR, **O'Neill HC**, Wageman CR, Patzlaff N, Grady SR, McIntosh JM, Marks MJ, Lester HA, Drenan RM (2012). α6*nicotinic acetylcholine receptor expression and function in a visual salience circuit. J Neurosci, 32(30): 10226-37.

Ortiz NC, **O'Neill HC**, Marks MJ, Grady SR (2012). Varenicline blocks β2*-nAChR-mediated response and activates β4*-nAChR-mediated responses in mice in vivo. Nicotine Tob Res, 14(6): 711-19.

O'Neill HC, Loader JE, Hendry-Hofer TB, Rancourt RC, Orlicky D, and White CW (2011). Role of reactive oxygen and nitrogen species in olfactory epithelial injury by the sulfur mustard analog CEES. Am J Respir Cell Mol Biol, 45(2):323-31.

Veress LA, **O'Neill HC**, Loader JE, Hendry-Hofer TB, Rancourt RC, and White CW (2010). Airway obstructive cast formation from vascular damage induced by a sulfur mustard analog. Am J Respir Crit Care Med. 182 (11): 1352-61.

O'Neill HC, Veress LA, Hendry-Hofer TB, Loader JE, Rancourt RC, White CW, and Day BJ (2010). Treatment with the catalytic metalloporphyrin AEOL 10150 reduces markers of inflammation and oxidative stress due to 2-chlorethyl ethyl sulfide (CEES, half-mustard) exposure. Free Radic Biol Med. 48 (9): 1188-96.

Stabler SP, Sekhar J, Allen RH, **O'Neill HC** and White CW (2009). a-Lipoic Acid Induced elevated S-adenosylhomocysteine and depleted S-adenosylmethionine. Free Radic Biol Med. 47 (8): 1147-53.

O'Neill HC, Rancourt RC, White CW (2008). Lipoic acid suppression of neutrophil respiratory burst: effect of NADPH. Antioxid Redox Signal. 10(2): 277-85.

Rancourt RC, Lee RL, **O'Neill H**, Accurso FJ, White CW (2007). Reduced thioredoxin increases proinflammatory cytokines and neutrophil influx in rat airways: modulation by airway mucus. Free Radic Biol Med. 42(9): 1441-53.

Stringer KA, Tobias M, **O'Neill HC**, Franklin CC (2007). Cigarette smoke extract-induced suppression of caspase-3-like activity impairs human neutrophil phagocytosis. Am J Physiol Lung Cell Mol Physiol. 292(6): L1572-9.

Stevens KE, **O'Neill HC**, Rose GM, Luthman J (2006). The 5-HT(1A) receptor active compounds (R)-8-OH-DPAT and (S)-UH-301 modulate auditory evoked EEG responses in rats. Amino Acids 31(4): 365-75.

O'Neill HC, Schmitt MP, and Stevens KE (2003). Lithium alters measures of auditory gating in two strains of mice. Biological Psychiatry 54(8): 847-53.

O'Neill HC, Rieger K, Kem WR and Stevens KE (2003). DMXB, an a-7 nicotinic agonist, normalizes auditory gating in isolation-reared rats. Psychopharmacology 169(3-4): 332- 39.

BOOK CHAPTER

Grady, SR, McClure-Begley TM, **O'Neill HC**, Zambrano C, Marks MJ (2014). Presynaptic Nicotinic Acetylcholine Receptors: Subtypes and Functions. In: Handb. Exp. Pharm.: Neuronal Nicotinic Receptors.

SELECTED PRESENTATIONS

O'Neill HC and Madl AM. Terpene Inhalation in Vaping Products: What Do We Know About Safety? Cannabis Science Conference West, Long Beach CA. May 2022.

O'Neill HC and Stitzel JA. Developmental Exposure to Nicotine- It Might Be Grandma's Fault. State of Colorado Science Day. 2019.

History of Expert Testimony – Rule 26

7/12/2024 State of Alaska v. Amber Bates
United States District Court for the State of Alaska
Case No. 3:24-CR-00023-001-JMK-MMS
Pre-Trial Hearing
Defendant

This document was last updated January 2025.