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Engineering & Scientific Consulting

Jordan Pitt, Ph.D.

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Professional Profile

Dr. Pitt is an ecotoxicologist with over five years of experience in understanding the accumulation patterns and effects of anthropogenic stressors on organisms. Classically trained in environmental chemistry and biological oceanography, she has experience placing anthropogenic stressors into the greater environmental context. She is experienced in environmental toxicology, fish behavior and physiology, and methods of chemical identification and analysis.

Dr. Pitt has experience relating microplastic exposure and distribution data from field and laboratory exposures to the potential bioaccumulation of these particulates. As part of this work, Dr. Pitt is experienced with spectral analysis from a variety of different instruments including, Raman spectroscopy and Fourier-Transform Infrared Spectroscopy. She has also applied statistical techniques to these data using R statistical software and Python programming language. As the basis for this work, she has evaluated existing literature to understand how food web dynamics influence the movement of microplastics.

Through her doctoral work, Dr. Pitt has experience in evaluating a wide range of toxicological endpoints following contaminant exposure. She has experience linking molecular changes to physiological endpoints in organisms. This experience allows for a mechanism-based understanding of organismal impacts from a wide range of anthropogenic stressors.

Academic Credentials & Professional Honors

Ph.D., Biology, Massachusetts Institute of Technology, 2024

B.S., Environmental Chemistry and Biology, State University of New York, 2018

National Science Foundation, Graduate Research Fellow, 2019-2022

Prior Experience

Graduate Research Assistant, Massachusetts Institute of Technology, 2018-2023

Research Assistant, Duke University, 2016-2017

Publications

Hidayat AS, Pitt JA, Fredricks H, Hahn ME, Aluru N. Domoic acid induces developmental stage-specific effects on microglia in zebrafish. Harmful Algae 2025; 102862.

Pitt JA, Gallager SM, Youngs S, Michel AP, Hahn ME, Aluru N. The abundance and localization of environmental microplastics in gastrointestinal tract and muscle of Atlantic killifish (Fundulus heteroclitus):

a pilot study. Microplastics and Nanoplastics 2024; 4(1):23.

Pitt JA, Hahn ME, Aluru N. Implications of exposure route for the bioaccumulation potential of nanopolystyrene particles. Chemosphere 2024; 141133.

Landrigan PJ, Raps H, Cropper M, Bald C, Brunner M, Canonizado EM, Charles D, Chiles TC, Donohue MJ, Enck J, Fenichel P, Fleming LE, Ferrier-Pages C, Fordham R, Gozt A, Griffin C, Hahn ME, Haryanto B, Hixson R, Ianelli H, James BD, Kumar P, Laborde A, Law KL, Martin K, Mu J, Mulders Y, Mustapha A, Niu J, Pahl S, Park Y, Pedrotti M-L, Pitt JA, Ruchirawat M, Seewoo BJ, Spring M, Stegeman JJ, Suk W, Symeonides C, Takada H, Thompson RC, Vicini A, Wang Z, Whitman E, Wirth D, Wolff M, Yousuf AK, Dunlop S., The Minderoo-Monaco Commission on Plastics and Human Health. Annals of Global Health 2023; 89(1).

Pitt JA, Trevisan R, Massarsky A, Kozal JS, Levin ED, Di Giulio RT. Maternal transfer of nanoplastics to offspring in zebrafish (Danio rerio): A case study with nanopolystyrene. Science of The Total Environment 2018; 643:324-334.

Pitt JA, Kozal JS, Jayasundara N, Massarsky A, Trevisan R, Geitner N, Wiesner M, Levin ED, Di Giuli RT. Uptake, tissue distribution, and toxicity of polystyrene nanoparticles in developing zebrafish (Danio rerio). Aquatic Toxicology 2018; 194:185-194.

Pitt JA, Drouillard KG, Paterson G. Polychlorinated Biphenyl Bioaccumulation Patterns Among Lake Erie Lower Trophic Level Consumers Reflect Species Ecologies. Bulletin of Environmental Contamination and Toxicology 2017; 98(1):65-70.

Presentations

Pitt JA, Aluru N, Hahn ME. Developmental Exposure of Zebrafish to Nanoplastics Affects Cardiovascular Structure and Function but Does Not Disrupt Blood-Brain Barrier Permeability. Poster presentation, 44th Annual Meeting of SETAC North America, Louisville, KY, 2023.

Pitt JA, Aluru N, Hahn ME. Examining the Abundance and Localization of Environmental Microplastics in Different Tissues of Atlantic Killifish (Fundulus heteroclitus) Collected along Cape Cod Coast. Oral presentation, North Atlantic Chapter of SETAC, Amherst, MA, 2023.

Pitt JA, Aluru N, Hahn ME. Plastic Particle Persistence and Accumulation in Zebrafish (Danio rerio) Larvae. Oral presentation, Woods Hole Oceanographic Institution Biological Oceanography Seminar Series. Woods Hole, MA, 2023.

Pitt JA, Aluru N, Hahn ME. Differences in the Uptake and Accumulation of Nanoplastics between Oral and Waterborne Exposures using Larval Zebrafish (Danio rerio). Oral Presentation, 43rd Annual Meeting of SETAC North America, Pittsburgh, PA, 2022.

Pitt JA, Aluru N, Hahn ME. Do Microplastics Accumulate in Food Webs? Oral presentation, Woods Hole Oceanographic Institution Biological Oceanography Seminar Series, Woods Hole, MA, 2021.

Pitt JA, Aluru N, Hahn ME. Microplastics in Coastal Marine Animals: Defining the Problem. Oral presentation, Woods Hole Sea Grant Symposium, Woods Hole, MA, 2020.

Pitt JA, Trevian R, Massarsky A, Kozal JS, Levin ED, Di Giulio RT. Maternal Transfer and Toxicity of Polystyrene Nanoparticles in Zebrafish (Danio rerio). Poster presentation, 20th Pollutant Responses in Marine Organisms Meeting, Charleston, SC, 2019.

Pitt JA, Kozal JS, Trevisan R, Massarsky A, Jayasundara N, Di Giulio RT. Uptake, Tissue Distribution, and Toxicity of Polystyrene Nanoparticles in Developing Zebrafish (Danio rerio). Poster presentation, 57th Annual Meeting of the Society of Toxicology, San Antonio, TX, 2018.

Project Experience

- Provided scientific support for natural resource damage assessment of injuries to aquatic and terrestrial resources in North Carolina.
- Critically evaluated available literature on the detection of microplastics in various media.
- Prepared a white paper on the state of the science of microplastics in the ocean environment as it relates to oil and gas infrastructure.
- Conducted a comprehensive review of the toxicity of tire wear particle additives to aquatic organisms.
- Conducted environmental assessments and developed categorical exclusions, as appropriate, for human, veterinary and animal care products.
- Analyzed the behavioral and physiological impacts of nanoplastic exposure on developing fish. Studied morphological deformities, survival, behavioral responses, gene expression and enzyme activity changes, barrier permeability changes, and cardiovascular development and function. Utilized dose-response relationships to predict possible risk of nanopolystyrene exposure compared to concentrations reported in the literature.
- Assessed how exposure route (i.e. oral, parental, and systemic) affected nanopolystyrene uptake and distribution in larval fish.
- Investigated the prevalence of microplastics in two different tissues in locally collected mummichog. The collected data was used to determine prevalence trends of different plastic characteristics in fish.
- Performed a literature review on the state of research for microplastics in aquatic ecosystems regarding the trophic transfer, bioaccumulation, and biomagnification.
- Evaluated the utility PCBs as ecological tracers via differences in PCB congener distribution throughout different trophic levels.

Peer Reviews

Chemosphere, Journal of Hazardous Materials, Marine Pollution Bulletin