

# Crystal Lee Pow Jackson

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## EDUCATION

**PhD, Environmental Toxicology** 2015  
*North Carolina State University, Raleigh, NC*

**BS, Biological Sciences** 2010  
Minors: Environmental Science and Chemistry  
*Carnegie Mellon University, Pittsburgh, PA*

## PROFESSIONAL EXPERIENCE

**Research Environmental Scientist**, October 2021 – present

*RTI International - Research Triangle, NC*

- Conducts environmental health and water quality research from proposal development through dissemination of findings.
- Provides technical and logistical support to the Clean Water for US Kids program. Develops and enhances partnerships to promote testing and mitigation of lead contamination at child care centers and K–12 public schools. Develops training and communication materials; facilitates citizen science engagement by program participants. Provide technical and logistical support to Clean Water for US Kids program. Develop and enhance partnerships to promote testing and mitigation of lead contamination at child care centers and K-12 public schools.

**Environmental Toxicologist**, October 2018 – October 2021

*Division of Public Health, Occupational and Environmental Epidemiology Branch, North Carolina Department of Health and Human Services*

- Lead toxicology expert for Public Health in North Carolina. Oversee, review, and provide technical expertise on public health toxicological assessments, consultations, and evaluations generated by the Occupational and Environmental Epidemiology Branch staff. Serve as a toxicological expert and consultant on various workgroups and committees.
- Conduct systematic reviews, literature reviews, and summaries using formal systematic reviews and other standard approaches. Analyze toxicological, controlled human exposure, and/or epidemiological studies to inform public health practices. Write grant proposals and public communication documents. Develop standard operating procedures for toxicological procedures for colleagues and local health department staff. Collaborate with university partners to coordinate studies to address state public health concerns.
- Plan and manage the activities of the Building Resilient Environmental Health Capacity program, Private Well and Health program, and Fish Consumption Advisory program. Supervise and manage the recruitment of programmatic staff. Plan, monitor, and evaluate activities of CDC-funded cooperative agreements.
- Collaborate with community organizations, university researchers, and state and federal partners to address North Carolinians' environmental hazards.

**Adjunct Assistant Professor**, November 2017 – present

*Department of Environmental Science and Engineers, University of North Carolina - Chapel Hill, NC*

Provide coaching and mentoring to graduate students in the Gillings School of Public Health.

**Environmental Program Consultant, March 2016 – October 2018**

*Division of Public Health, Occupational and Environmental Epidemiology Branch, North Carolina Department of Health and Human Services*

- Planned and managed the activities of the Private Well and Health program. Supervised and managed the recruitment of programmatic staff. Planned, monitored, and evaluated activities of CDC-funded private well water cooperative agreement.
- Conducted systematic reviews, literature reviews, and summaries using formal systematic reviews and other standard approaches. Analyzed toxicological, controlled human exposure, and epidemiological studies to inform public health practices. Wrote grant proposals and public communication documents. Collaborated with university partners to coordinate studies to address state public health concerns.
- Collaborate with community organizations, university researchers, state and federal partners to address private well hazards facing North Carolinians.

**Graduate Research Assistant, August 2010 – December 2015**

*Department of Biological Sciences, North Carolina State University, Raleigh, NC. Dissertation*

- Planned and implemented graduate research with an interdisciplinary team. Conducted, interpreted, evaluated, and analyzed scientific data using in vivo and in vitro toxicological studies to assess the impacts of estrogenic contaminants in the environment.
- Developed an in vivo vitellogenesis-based assay to assess activation of Japanese medaka (*Oryzias latipes*) estrogen receptors by environmental estrogens.
- Conducted a statewide assessment of the prevalence of intersex and endocrine disrupting compounds in rivers and streams throughout NC.
- Analyzed the impacts of estrogenic exposure during critical windows in development on reproductive success in medaka.
- Provided leadership, oversight, and technical expertise to undergraduate research assistants. Coached and mentored undergraduate students. Communicated research results to stakeholders and at scientific conferences.

**Research Assistant, September 2009 – May 2010**

*Department of Biological Sciences, University of Pittsburgh, Pittsburgh, PA. Advisors: Drs. Rickey Cothran, John Hammond, and Rick Relyea.*

Quantified morphological changes in archived tadpole specimens to examine how phylogeny and ecological conditions affect the expression of phenotypic plasticity in anurans. Aided in several ongoing research projects in the fields of ecotoxicology, evolutionary ecology, and community/ecosystem ecology

**Support Staff, June 2009 – August 2009**

*The Aspen Institute, Washington, D.C.*

Provided support for the energy and environment. Duties included organizing roundtables and forums to discuss current issues in the energy and environment sector.

**Research Assistant, May 2008 – August 2008**

*Smithsonian Environmental Research Center, Edgewater, MD. Advisors: Drs. Pat Neale, Maria Tzortziou, and Pat Megonigal.*

Sampled water and quantified water quality parameters to assess the influence of brackish marsh on the water quality of an estuary.

**Research Assistant, October 2007 – May 2009**

*Department of Biological Sciences, Carnegie Mellon University, Pittsburgh, PA. Advisors: Drs. Bruce Armitage and Peter Bergert.*

Designed and conducted experiments to assess the binding affinity of single-chain variable fragments (scFv) clones to novel fluorescent dye to characterize and develop fluorochrome probes for imaging.

**Research Assistant, May 2007 – August 2007**

*Howard Hughes Medical Institute Summer Research Institute, Carnegie Mellon University, Pittsburgh, PA. Advisors: Drs. Peter Berget, Jim Burnette, and Elizabeth Jones.*

In a group of peers, participated in three research projects focused on molecular biology. Duties included experimental design, interpretation of results, and dissemination of results in various forums.

## MENTORING ACTIVITIES

**Committee Member**

Kennedy Holt-Doctorate of Public Health November 2019 - present  
University of North Carolina - Chapel Hill, NC

**Committee Member**

Aleah Walsh-Master of Public Health January 2020 - present  
University of North Carolina - Chapel Hill, NC

**Committee Member**

Erica Woods-Master of Public Health January 2019 - May 2019  
University of North Carolina - Chapel Hill, NC

**Graduate Student Advisor**

May 2015 - Dec. 2015  
Undergraduate Researcher - Keri Creech-SR Environmental Sciences  
North Carolina State University, Raleigh, NC

**Graduate Student Advisor**

December 2014 - June 2015  
Undergraduate Researcher - Kedamawit Tilahun-JR Biological Sciences  
North Carolina State University, Raleigh, NC

**Student Representative**

April 2014 - March 2015  
Carolina's Regional Chapter of the Society of Environmental Toxicology and Chemistry  
North Carolina State University, Raleigh, NC

**Graduate Student Mentor**

November 2013 - December 2015  
Doris Duke Conservation Scholars Program  
North Carolina State University, Raleigh, NC

**Graduate Student Advisor**

August 2013 - August 2014  
North Carolina State University Initiative for Maximizing Student Diversity Program  
Undergraduate Researcher - Ravyn Njagu-SO Biological Sciences  
Undergraduate Researcher - Ayanna Glaize-SO Biochemistry  
North Carolina State University, Raleigh, NC

**Council Member**

August 2012 - May 2013  
North Carolina State University College of Agriculture and Life Sciences Diversity Council

## PEER-REVIEWED PUBLICATIONS

Wait, K.; Katner, A.; Gallagher, D.; Edwards, M.; Mize, W.; **Lee Pow Jackson, C.**; and Pieper, K.J. Disparities in well water outreach and assistance offered by local health departments: A North Carolina case study. *Science of The Total Environment*. **2020**, 747:141173

**Lee Pow Jackson, C.** & Zarate-Bermudez, M. Exposure to Contaminants Among Private Well Users in North Carolina: Enhancing the Role of Public Health. *Journal of Environmental Health*. **2019**, 81(8), 36-39.

**Lee Pow, C.**; Cope, W.G.; Kwak, T.J.; Rice, J.A.; Law, J.M; Aday, D.D.; Kullman S.W. Windows of Susceptibility and Consequences of Early Life Exposures on Reproductive Success. *Environmental Science & Technology*. **2017**, 51(9):5296-305.

**Lee Pow, C.**; Kwak, T.J.; Cope, W.G.; Rice, J.A.; Law, J.M; Kullman S.W.; Aday, D.D. Endocrine active contaminants in aquatic systems and intersex in common sport fishes. *Environmental Toxicology and Chemistry*. **2016**, 9999:1–10.

**Lee Pow, C.**; Yost E.E.; Kullman S.W. Sharing the Roles: An assessment of Japanese Medaka's Estrogen Receptors in Vitellogenin Induction. *Submitted to Environmental Science & Technology*. **2016**, 50: 8886-8895.

Sackett, D.K.; **Lee Pow, C.**; Rubino M.; Aday, D.D.; Cope, W.G.; Kullman S.W.; Rice, J.A.; Kwak, T.J.; Law, J.M Sources of endocrine-disrupting compounds in North Carolina waterways: A geographic information systems approach. *Environmental Toxicology and Chemistry*, **2015**, 34: 437-445.

Yost, E.E.; **Lee Pow, C.**; Hawkins, M.B.; Kullman, S.W. Bridging the gap from screening assays to effects in fish: Potential roles of multiple estrogen receptor subtypes. *Environmental Science and Technology*, **2014**, 48: 5211-5219.

Tzortziou, M; Neale, P; Megonigal, P; **Lee Pow, C**; Butterworth, M. Spatial gradients in dissolved carbon due to tidal marsh outwelling into a Chesapeake Bay estuary. *Marine Ecology Progress Series*, **2011** 426: 41-56.

Ozhalici-Unal, H; **Lee Pow, C**; Marks, S A.; Jesper, L D.; Silva, GL.; Shank, NI.; Jones, EW.; Burnette, JM., III; Berget, PB.; Armitage, BA. A rainbow of fluoromodules: a promiscuous scFv protein binds to and activates a diverse set of fluorogenic cyanine dyes. *Journal of the American Chemical Society*, **2008** 130(38): 12620-12621.

## PRESENTATIONS

**Lee Pow Jackson, C.** “Toxicological Assessment of Radionuclides” *Community Training on Radon and Radionuclide Testing and Mitigation for Private Wells, June 2019. Raleigh, NC.*

**Lee Pow Jackson, C. & Pieper, K.** “Private domestic wells in NC – a statewide assessment of health departments’ online- content” *National Environmental Health Association Conference, June 2019. Nashville, TN*

**Lee Pow Jackson, C.** “A Collaboration between Academia and State Government to Strengthen County Private Well and Health Programs” *National Environmental Health Association Conference, June. 2018. Anaheim, CA.*

**Lee Pow Jackson, C.** “A Public Health Perspective on Private Wells” *On-site Water Protection Conference, Oct. 2017. Raleigh, NC.*

**Lee Pow Jackson, C.** “Private Wells and Farmworker Health” *2017 North Carolina Farmworker Institute Summit and Networking Event, April 2017. Chapel Hill, NC.*

**Lee Pow Jackson, C.** “North Carolina’s plan to close performance gaps in its private well and health program” *Water Resources Research Institute Conference, Mar. 2017. Raleigh, NC.*

**Lee Pow, C. Invited Guest Presentation** “From Molecular to Organismal Effects: Understanding the Intricacies of Estrogenic Exposure in Fish” *Emerging Topics Forum, US Environmental Protection Agency, Oct. 2015. Research Triangle Park, NC.*

**Lee Pow, C. Invited Guest Presentation** “Fish and Blips: Why are there eggs in their testis?” *Dept. of Natural Sciences and Mathematics, Shaw University, Oct. 2015. Boone, NC.*

**Lee Pow, C. Invited Guest Presentation** “Intersex: Occurrence, Severity and Relationship to Endocrine Disrupting Compounds in Centrarchid fishes throughout North Carolina” *Dept. of Biological Sciences, Appalachian State University, Aug. 2015. Boone, NC.*

**Lee Pow, C.; Law, J.M.; Kwak, T.J.; Shea, D; Cope, W.G.; Rice, J.A.; Kullman S.W; Aday, D.D. Platform** “Estrogenic Contaminant Concentrations and the Incidence of Intersex in Centrarchid Fishes: Landscape-Level Relationships in North Carolina” *American Fisheries Society Annual Meeting Best Student Presentations, Aug. 2015. Portland, OR.*

**Lee Pow, C; Yost, E.E.; Kullman, S.W.** “The Role of Three Teleost Estrogen Receptors in Vitellogenesis in Japanese Medaka.” **Platform** *Carolina’s Chapter Society for Environmental Toxicology and Chemistry, Mar. 2015. Raleigh, NC.*

**Lee Pow, C.; Law, J.M.; Kwak, T.J.; Shea, D; Cope, W.G.; Rice, J.A.; Kullman S.W; Aday, D.D. Platform** “Relating the Incidence of Intersex in Centrarchid Fishes to Estrogenic Contaminant Concentrations Across North Carolina” *North Carolina Chapter of the American Fisheries Society Annual Meeting, Feb. 2015. Carolina Beach, NC. \*Received 1<sup>st</sup> place student presentation award*

**Lee Pow, C.; Cope, W.G.; Rice, J.A.; Kwak, T.J.; Law, J.M.; Shea, D; Kullman S.W; Aday, D.D. Platform** “Relationships between estrogenic contaminant concentrations and incidence of intersex in centrarchid fishes across North Carolina” *Society for Environmental Toxicology and Chemistry North*

*America 35<sup>th</sup> Annual Meeting, Nov. 2014. Vancouver, Canada.*

**Lee Pow, C;** Yost, E.E.; Kullman, S.W. **Platform** “Who’s pulling the strings: investigation of the role of three teleost estrogen receptors on vitellogenesis.” *Society Environmental Toxicology and Chemistry North America 35<sup>th</sup> Annual Meeting, Nov. 2014. Vancouver, Canada.*

Njagu, R.; **Lee Pow, C.**; Kullman S.W “Does FXR *In vitro* High-Throughput Screening Predict *In vivo* Results?” **Poster.** *13th Annual North Carolina State Summer Undergraduate Research Symposium. July 2014, Raleigh, NC.*

Glaize, A.; **Lee Pow, C.**; Kullman S.W “Estrogen Effects on Embryonic Development of Japanese Medaka (*Oryzias latipes*)” **Poster** *13th Annual North Carolina State Summer Undergraduate Research Symposium. July 2014, Raleigh, NC.*

**Lee Pow, C.**; Cope, W.G.; Aday, D.D.; Rice, J.A.; Kwak, T.J.; Law, J.M.; Kullman S.W. **Platform** “Landscape Assessment of Estrogenic Contaminants and Intersex Fish in North Carolina Streams and Rivers.” *Carolina’s Chapter Society for Environmental Toxicology and Chemistry, April 2014. Clemson, SC.*

**Lee Pow, C.**; Cope, W.G.; Aday, D.D.; Rice, J.A.; Kwak, T.J.; Law, J.M.; Kullman S.W. **Poster** “Statewide assessment of estrogenic contaminants and intersex in North Carolina Streams and Rivers.” *Society of Environmental Toxicology and Chemistry North America 34th Annual Meeting, Nov. 2013. Nashville, TN.*

Yost, E.E.; **Lee Pow, C.**; Kullman, S.W **Poster** “Getting Fishy: Screening for Estrogenic Activity in Aquatic Environments.” *Joint Environmental Protection Agency North Carolina State University Interactive Collaboration Forum and Poster Session. Mar. 2013. Research Triangle Park, NC*

Yost, E.E.; **Lee Pow, C.**; Hawkins, M.B.; Kullman, S.W. **Platform** “Bridging the Gap Between Screening Assays and Estrogenic Effects in Fish.” *Society of Environmental Toxicology and Chemistry North America 34th Annual Meeting, Nov. 2013. Nashville, TN.*

Sackett, D.K.; Rubino M.; **Lee Pow, C.**; Law, J.M.; Aday, D.D.; Cope, W.G.; Kullman S.W.; Rice, J.A.; Kwak, T.J. **Platform** “Measuring sources of endocrine disrupting compounds in North Carolina waterways: a GIS-based sampling approach for studies on intersex fish.” *142nd Annual Meeting of the American Fisheries Society. Aug. 2012, St. Paul, Minnesota.*

**Lee Pow, C;** Tzortziou, M; Neale, P; Megonigal, P; Butterworth. **Poster** “A Trip Down Muddy Creek with CDOM: The Spatial Significance of Marsh Derived CDOM to the Rhode River.” *Advancing the Science of Limnology and Oceanography Aquatic Sciences Meeting 2009, Jan. 2009. Nice, France*

**Lee Pow, C;** Ozhalici-Unal, H; Jesper, L D.; Marks, S A.; Berget, PB.; Armitage, BA **Poster** “Selection and Characterization of Dimethylindole Red (DIR) Activating scFv.” *Carnegie Mellon University Molecular Biosensor and Imaging Center Internal Retreat, Feb. 2008. Pittsburgh, PA*

## **PROFESSIONAL DEVELOPMENT**

July 2020: North Carolina Public Health Leadership Institute, University of North Carolina, Chapel Hill, NC

August 2019: Public Health Practice Academy's Workshop: Strength-Based Leadership: Creating Workplaces that Work. Region IV Public Health Training Center, Raleigh, NC

April 2016: Professional Training Workshop: Basic Concepts in Chemical Mixtures Toxicology and Risk Assessment (Glenn Rice, Moiz Mumtaz and Richard Hertzberg) –Toxicologist and Risk Assessment Conference 2016, Cincinnati, OH

April 2016: Professional Training Workshop: Crash Course in Human Health Risk Assessment of Environmental Chemicals (Glenn Rice, John Lipscomb, Jeff Swartout, and Phillip Kaiser) –Toxicologist and Risk Assessment Conference 2016, Cincinnati, OH

April 2016: Professional Training Workshop: Developments in Risk Assessment: Basic Concepts and State of the Science for Evaluating Toxicity Data for Human Health Risk Assessment (Lynne Haber and Bernard Gadagbui) –Toxicologist and Risk Assessment Conference 2016, Cincinnati, OH

Nov 2014: Professional Training Course: Applications of Population Biology to Ecological Risk Assessments (Larry Barnhouse and Carolyn Meyes) – Society for Environmental Toxicologist and Chemist North America 35<sup>th</sup> Annual Meeting, Vancouver, Canada

June 2014: National Conservation Training Center – Doris Duke Conservation Scholars Program Training Week, Shepherdstown, WV

Aug 2012: Preparing Future Leaders Course: How to Write a Scholarly Introduction (Melissa Bostrom) – North Carolina State University, Raleigh, NC

Aug 2012: Preparing Future Leaders Webinar: Writing Federal Research Proposal (Jaine Place)– North Carolina State University, Raleigh, NC