Yiguang Zhu

Ph.D. Student in Environmental Health & Engineering

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EDUCATION

Johns Hopkins University | Whiting School of Engineering — Baltimore, MD
PhD Candidate in Environmental Health and Engineering — Jul. 2021 – Expected May 2026
- Advisor: Dr. Paul A. Locke, JHU Toxicology Policy Program
- Collaboration: Dr. Joe Zhang Lab, Shenzhen Bay Laboratory
- Research area: Validation and regulatory acceptance of 2D/3D New Approach Methods (NAMs), with a focus on Microphysiological Systems (MPS); NAMs based drug-induced cardiotoxicity screening

Johns Hopkins University | Bloomberg School of Public Health — Baltimore, MD
ScM in Environmental Health and Engineering – GPA: 3.95 — Aug. 2019 – May 2021
- Advisor: Dr. Paul A. Locke
- Thesis: *Reducing Lung Cancer Risk from Radon Exposure in Manheim Township, PA: Radon Resistant New Construction (RRNC) as a Significant Public Health Tool (Accepted)*

Pennsylvania State University | College of Earth and Mineral Science — State College, PA
BS in Environmental System Engineering - GPA: 3.73 — Aug. 2015 – May 2019

Research Interests

My research focuses on the intersection of environmental health sciences and science policy. I specialize in the regulatory validation, qualification, and standardization of New Approach Methodologies (NAMs), particularly *in vitro* testing methods including MPS and organ-on-a-chip technologies. By analyzing decision-making frameworks in drug, chemical, and medical product approval, I aim to advance evidence-based policymaking and accelerate the regulatory translation and implementation of innovative testing methods.

Research Experiences

Doctoral Research | Johns Hopkins University — Jul. 2021 – Present
Advisor: Dr. Paul A. Locke
- Developed a validation framework to advance regulatory acceptance of NAMs for toxicity testing, drug development, and regulatory decision making
- Test the proposed validation framework using real-world cardiac 2D and 3D in vitro models to demonstrate its applicability in diverse regulatory scenarios

Visiting Student | Johns Hopkins University — Aug. 2022 – Nov. 2024
Supervisor: Dr. Deok-Ho Kim, Department of Biomedical Engineering
- Optimized a pipeline to screen drug-induced cardiotoxicity with a nanopatterned microelectrode array (nanoMEA) based functional phenotyping assay (Manuscript published)
- Developed and validated a high-throughput, automated Engineered Heart Tissue (EHT) model for physiological function assessment and cardiotoxicity screening (manuscript submitted)

Research Assistant | Johns Hopkins University — May 2020 – Jul. 2021
Toxicology Policy Program
- Drafted appropriation requests that were adopted in two Congressional committee reports accompanying appropriation bills advocating laboratory animal welfare and adoption of non-animal methods
- Facilitated numerous meetings with congressional offices and assisted in legislative hearings and briefings

ScM Thesis Research | Johns Hopkins University — Aug. 2019 – May 2021

Advisor: Dr. Paul A. Locke
- Evaluated public health impacts of local radon mitigation ordinances (manuscript accepted)
- Synthesized epidemiological data into policy recommendations and presented in four stakeholder meetings

Undergraduate Independent Study | Pennsylvania State University Oct. 2018 – May 2019
Advisor: Dr. Meng Wang
- Contributed to the review paper Integrative Phototrophy for Environmental and Public Health Services
- Studied the production pathways of biohydrogen and polyhydroxyalkanoates (PHAs) by microalgae

Research/Lab Assistant | Fujian Normal University 2017 & 2018 Summer
Supervisor: Dr. Yiqing Li, State Key Laboratory of Subtropical Mountain Ecology
- Participated in field-based soil warming experiments, including forest litter collection, biometric measurements, and photosynthetic parameter monitoring
- Coauthored a journal article *Effect of soil warming on growth and photosynthetic characteristics of Cunninghamia lanceolata saplings*

Employment History

Intern | National Center for Health Research, Washington DC Jun. 2025 – Aug. 2025
- Tracked FDA and congressional activities (e.g., Advisory Committee meetings, House/Senate hearings)
- Analyzed FDA programs and pathways (user fees, 510(k)/DDT/PMA, EUA, accelerated approval); drafted a manuscript examining the benefits and limitations of COVID-19 EUAs and transition to full approval
- Contributed to FDA docket comments and policy statements (e.g., hormone-replacement therapy), aligning recommendations with patient-safety and evidence standards

Lead Teaching Assistant | Bloomberg School of Public Health Mar. 2022 – Present
- Manage the TA team for Introduction to Environmental and Occupational Health Law
- Moderate class discussions, addressing student inquiries, and grading students' essays

English-Chinese Translator/Interpreter | Freelance Feb. 2015 – Present
- Served as the translator for dozens of customers in academic, business, and legal settings
- Served as the interpreter for multiple bilingual and multilingual scientific conferences

Grading Assistant | Pennsylvania State University Jan. 2017 – May 2019
Civil and Environmental Engineering Department, Pennsylvania State University
- Worked with three instructors on the course Introduction to Environmental Engineering (class size: 80+)

Internship | The Amenity Foundation, Nanjing, China 2015 Summer
- Translated 100+ patient case files for low-income children with Down syndrome or cleft lip from Chinese to English, ensuring culturally sensitive communication with international donors
- Coordinated 2 volunteer outreach campaigns focused on raising awareness and funds for cleft lip surgeries and Down syndrome

Peer-Reviewed Journal Publication

Zhu,Y., Locke, P.A., Latshaw, M.W. Bright Spot, Closing Door: How Immigration Restrictions Challenge America's Public Health Innovation. *American Journal of Public Health*. (accepted)

Ren, Z., Kim, B., Go, G., Wang, H., **Zhu, Y.**, Matsubara, T., Harriot, A.D., Loyala, A., Akarapipad, P., Criscione, J., Herron, T., Lee, P.H.U., Lee, D.I., Lee, L.P.S., Kim, D.-H. MAP: A Comprehensive Human Muscle Analysis Platform Featuring Automated High-Volume Production and In-depth Physiological Function Assessment. (under review)

Zhu, Y., Fox, M., Corrigan, B., Locke, P.A., Reducing Lung Cancer Risk from Radon Exposure in Manheim Township, PA: Radon Resistant New Construction (RRNC) as a Significant Public Health Tool. *International Journal of Radiation Biology*, 1–11. https://doi.org/10.1080/09553002.2025.2588394.

Kim, B., Choi, J. S., **Zhu, Y.**, Kim, J., Kim, Y.S., Parra, A., Locke, P.A., Kim, J.H., Herron,T., & Kim, D.-H. (2024). Effect of Electrochemical Topology on Detection Sensitivity in MEA Assay for Drug-Induced Cardiotoxicity Screening. *Biosensors and Bioelectronics*. DOI:10.1016/j.bios.2024.117082.

Ye, W., Xiong, D.,Yang, Z., **Zhu, Y.**, Zhang, Q., Lin, W., Xu, C., Liu, X., Zhang, J., Yang, Y. (2019). Effect Of Soil Warming on Growth and Photosynthetic Characteristics of Cunninghamia Lanceolata Saplings. *Acta Ecologica Sinica.* DOI:10.5846/stxb201801150110.

Presentations

Zhu, Y., & Harriot, A. (2025). *Virtual Lab Tour of Kim Lab with Q&A*. Oral Presentation, Animal & Natural Resource Law Review (ANRLR) Symposium, East Lansing, MI.

Zhu, Y., & Locke, P.A. (2025). *Advancing Validation Methodologies and Regulatory Acceptance of Microphysiological Systems*. Poster Presentation, EHE Research Retreat Poster Session, Baltimore, MD.

Ren, Z., Kim, B., Go, G., Wang, H., **Zhu, Y.**, Akarapipad, P., Loyola, A., Matsubara, T., Criscione, J., Lee, D., Herron, T., & Kim, D. (2024). *Automated and Scalable Muscle Tissue System with Magnetic-based Functional Evaluation*. Presentation at the Biomedical Engineering Society 2024 Annual Meeting (BMES 2024), Baltimore, MD.

Zhu, Y., & Locke, P.A. (2024). *Advancing Validation Methodologies and Regulatory Acceptance of Microphysiological Systems*. Oral Presentation, European Society for Alternatives to Animal Testing (EUSAAT 2024), Linz, Austria.

Locke, P.A., & **Zhu, Y.** (2024). *Reducing Lung Cancer Risk from Radon Exposure: Radon Resistant New Construction as a Significant Public Health Tool*. Oral Presentation, Canadian Nuclear Laboratories' Low Dose Radiation Webinar Series, Virtual.

Zhu, Y. (2024). *The Impact of U.S. FDA Modernization Act 2.0 on Animal Testing*. Oral Presentation, Personal Care and Homecare Ingredients (PCHi 2024), Shanghai, China (Virtual).

Zhu, Y., & Locke, P.A. (2024). *Advancing Validation Methodologies and Regulatory Acceptance of Microphysiological Systems*. Poster Presentation, Microphysiological System World Summit 2024 (MPS WS 2024), Seattle, WA.

Zhu, Y., & Locke, P.A. (2023). *Reducing Lung Cancer Risk from Radon Exposure in Manheim Township, PA: Radon Resistant New Construction (RRNC) as a Significant Public Health Tool*. Oral Presentation, Indoor Environments 2023™, Nashville, TN.

Zhu, Y., & Locke, P.A. (2023). *Recommendations for Promoting the Regulatory Acceptance of Microphysiological Systems*. Oral Presentation, 12th World Congress on Alternatives and Animal Use in the Life Sciences (WC12), Niagara Falls, Canada.

Zhu, Y. (2021). *RRNC Cost Effectiveness for Reducing Lung Cancer Risk*. Oral Presentation, CRCPD - National Radon Training Event, Virtual.

Zhu, Y., & Locke, P.A. (2020). *Lung Cancer Risk Reduction Associated with RRNC: A study of Manheim Township, PA*. Presentation at the Region 3 Mid-Atlantic Radon Stakeholder Meeting, Virtual.

Zhu, Y. (2019). *Phototrophs Polyhydroxyalkanoates (PHAs) and Hydrogen Production from Wastewater*. Poster Presentation, Undergraduate Exhibition, State College, PA.

Extracurricular Activities

SPDG Science Policy Coordinator | Johns Hopkins University Jun. 2025 – Present

- Served on the leadership team at Science Policy & Diplomacy Group
- Spearheaded networking events and career panels, connecting graduate students with industry leaders

PhD Representative & GRO Liaison | Johns Hopkins University Aug. 2022 – Aug. 2024
- Represented over 50 PhD students at the Graduate Representative Organization (GRO)
- Initiated and organized volunteer and social events to cultivate supportive departmental community

CSSA Benefiting THON Chair | Pennsylvania State University Aug. 2017 – May 2019
- Organized campus-wide fundraisers with my team and raised over $6000 for pediatric cancer research
- Completed the 46-hour, no-sitting, no-sleeping dance marathon

Group leader of the Young Talent Program| Citibank (China) Co., Ltd., Nanjing 2015 Summer
- Analyzed customers' investment strategies with the group and presented the plan to the supervisor
- Gained insights into real-world investment strategies from the experienced instructors

Honors and Awards

Radon Mini-Grant Program | Conference of Radiation Control Program Directors 2020

Morgan-James Scholarship Fund | Bloomberg School of Public Health Fall 2020 & Fall 2024

John and Elizabeth Holmes Teas Scholarship | Pennsylvania State University Fall 2019

Dean's List | Pennsylvania State University Fall 2019

Certificates

Certificate of Risk Sciences and Public Policy | Johns Hopkins University 2021

Certificate of Food Systems and Public Health | Johns Hopkins University 2021

GIA Applied Jewelry Professional (GIA AJP) | Gemological Institute of America (GIA) 2020

Techniques

Technical Skills: R, MATLAB, STATA, MS Office (Excel, PowerPoint, Word)

Languages: Chinese (Native), English (Fluent), French (Basic)

Science Policy: Data-Driven Policy Analysis, Scientific Communication, Regulatory Document Drafting

Laboratory Skills: Stem Cell Biology, Tissue Engineering, Electrophysiology/Functional Assessment