

Kristal A. Rychlik

UMHB Box 8010, 900 College Street, Belton, TX 76513, (254) 295-4278, krychlik@umhb.edu

EDUCATION AND TRAINING

Postdoctoral Fellow Johns Hopkins School of Public Health, Environmental Health and Engineering

Ph.D./2017 Texas A&M University, Toxicology

B.S./2010 Texas A&M University, Biomedical Sciences

PEDAGOGY

Teaching Academy Certificate, Johns Hopkins University, 2019
Three-phase 27-hour training program aligned with the Center for the Integration of Research, Teaching, and Learning (CIRTL) mission and curriculum

TEACHING

Classroom Instruction

2022-Present Assistant Professor of Public Health, University of Mary Hardin-Baylor, Belton, Texas

- Community & Public Health
- Pathophysiology of Chronic Disease
- Foundations of Health Science
- Biostatistics (MPH)
- Applied Epidemiology (MPH)
- Proposal Writing and Grant Management (MPH)

2021-2022 Visiting Assistant Professor, Sam Houston State University, Huntsville, Texas

- Contemporary Biology
- Biology I & II
- Intro to Cellular Biology
- Environmental Toxicology

2021 (Spring) Instructor, Goucher College, Towson, Maryland

- Epidemiology, lower-level course
- Students rated my instruction of the course at 12/13 on evaluations.

2020 Invited Lecturer, Regulation of the Digestive System, University of Houston Clear Lake

2020 (Spring) Instructor, Goucher College, Towson, Maryland

- Seminar in Public Health, upper level non major course
- Students rated my instruction of the course at 11/13 on evaluations.

2020 Invited Lecturer, Ecological Succession, Franciscan University

2019 (Spring) Teaching Fellow, Goucher College, Towson, Maryland

- Seminar in Public Health, upper level non major course
- Student evaluations rated my overall teaching effectiveness as 3.875/5. Importantly, students unanimously agreed that I encouraged student questions and participation.

2016 Invited Lecturer, Environmental & Occupational Diseases, Texas A&M University

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2015 Invited Lecturer, Environmental Sustainability & Public Health, Texas A&M University

RESEARCH MENTORSHIP

Advisees/Mentees

Aakriti Mathur	2020-2021	Undergraduate student at Johns Hopkins University
Nejat Alkadir	2019-2020	Undergraduate student at Johns Hopkins University
Emily Illingworth	2018-2021	Doctoral candidate at Johns Hopkins University
Chloe Kashiwagi	2018-2019	ScM; currently a Life Science Research Professional at Stanford University
Briana Celix	2018	Undergraduate student in Washington; currently applying to medical school
Ian Sanchez	2017-2018	ScM; currently employed in consulting
Sarah Attreed	2017-2020	Postdoctoral Fellow at USDA
Jairus Pulczinski	2014-2016	M.S. at Texas A&M University; current doctoral candidate at Johns Hopkins University
Rebecca O'Donnell	2015-2017	M.S. at Texas A&M University; currently working in industry as safety specialist

RESEARCH EXPERIENCE

2017-2021 Postdoctoral Fellow

Environmental Health and Engineering, Bloomberg School of Public Health, The Johns Hopkins University

As a postdoctoral fellow in Dr. Fenna Sille's laboratory, my research continues to investigate the immune effects of prenatal exposure with a focus on the effects of arsenic on macrophage immune response and challenge with infectious disease. Endpoints we are currently investigating include cell characterization using flow cytometry, metabolomics via mass spectrometry, and RNA expression with microarray and RNASeq.

2011-2017 Graduate Research Assistant, Toxicology

Environmental and Occupational Health, School of Public Health, Texas A&M University

In Dr. Johnson's laboratory, my dissertation research was focused on environmental risk factors associated with childhood asthma, specifically designing a mouse model of prenatal exposure to ultrafine particulate matter and investigating asthma pathogenesis in the offspring. I also assessed environmental chemical exposures, like polycyclic aromatic hydrocarbons, during pregnancy for a study population of pregnant women near the Texas/Mexico border.

PEER REVIEWED PUBLICATIONS

I. Mendoza-Sanchez, I. Uwak, L. Myatt, A. Van Cleve, J.C. Pulczinski, **K.A. Rychlik**, S. Sweet, T. Ramani, J. Zietsman, M. Levy Zamora, K. Koehler, G. Carrillo, N.M. Johnson. 2021. Maternal exposure to polycyclic aromatic hydrocarbons in South Texas, evaluation of silicone wristbands as personal passive samplers. *Journal of Exposure Science & Environmental Epidemiology*. DOI: 10.1038/s41370-021-00348-y

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K.A. Rychlik, F.C.M. Sillé. 2019. Environmental exposures during pregnancy: Mechanistic effects on immunity. *Birth Defects Research*; 111(4):178-196. DOI: 10.1002/bdr2.1469.

K.A. Rychlik, J.R. Secrest, C. Lau, J. Pulczinski, M.L. Zamora, J. Leal, R. Langley, L. Myatt, M. Raju, R. C-A. Chang, Y. Li, M.C. Golding, A. Rodrigues-Hoffmann, M.J. Molina, R. Zhang, and N.M. Johnson. 2019. In utero ultrafine particulate matter exposure causes offspring pulmonary immunosuppression. *Proceedings of the National Academy of Sciences U.S.A.*;116(9):3443-3448. DOI: 10.1073/pnas.1816103116.

K.E. Zychowski, S.E. Elmore, **K.A. Rychlik**, H.J. Ly, F. Pierezan, A. Isaiah, J.S. Suchodolski, A. Rodrigues-Hoffman, A. Romoser, and T.D. Phillips. 2015. Mitigation of TNBS-induced colitis with NovaSil therapy. *Digestive Diseases and Sciences*. 60(2):382-392. DOI: 10.1007/s10620-014-3360-7.

N.J. Mitchell, J. Kumi, M. Aleser, S.E. Elmore, **K.A. Rychlik**, K.E. Zychowski, A.A. Romoser, T.D. Phillips, and N.A. Ankrah. 2014. Phase I intervention with calcium montmorillonite clay (UPSN) in children. *The American Journal of Tropical Medicine and Hygiene*. 91(4):777-785. DOI: 10.4269/ajtmh.14-0093.

N.J. Mitchell, K.S. Xue, S. Lin, A. Marroquin-Cardona, **K.A. Brown (Rychlik)**, S.E. Elmore, L. Tang, A. Romoser, W.C.A. Gelderblom, J-S. Wang, and T.D. Phillips. 2014. Calcium montmorillonite clay reduces AFB1 and FB1 biomarkers in rats exposed to single and co-exposures of aflatoxin and fumonisin. *Journal of Applied Toxicology*. 34(7):795-804. DOI: 10.1002/jat.2942.

K.A. Brown (Rychlik), T. Mays, A. Romoser, A. Marroquin-Cardona, N.J. Mitchell, S.E. Elmore, and T.D. Phillips. 2014. Modified hydra bioassay to evaluate the toxicity of multiple mycotoxins and predict the detoxification efficacy of a clay-based sorbent. *Journal of Applied Toxicology*. 34(1):40-8. DOI: 10.1002/jat.2824. [Epub October 2012].

S.E. Elmore, N. Mitchell, T. Mays, **K. Brown (Rychlik)**, A. Marroquin-Cardona, A. Romoser, and T.D. Phillips. 2013. Common African cooking processes do not affect the aflatoxin binding efficacy of refined calcium montmorillonite clay. *Food Control*. 37. DOI: 10.1016/j.foodcont.2013.08.037.

Publications in Progress

K.A. Rychlik, E. Illingworth, I. Sanchez, A. Mathur, S. Attreed, T. Howard, P. Sinha, K. Casin, N. Taube, J. Loube, R. Tasneen, E. Nuermberger, W. Mitzner, M. Kohr, F.C.M. Sillé. Characterization of a Mouse Model of Prenatal Exposure to Arsenic: Sex-Specific Macrophage Dysfunction. *Manuscript submitted to Toxicology Letters*.

HONORS & AWARDS

- 2022 Society of Birth Defects Research and Prevention (SBD RP; formerly Teratology Society) Trainee Travel Award
- 2020 Society of Toxicology New Experiences in Toxicology Award to attend the "Epigenetics Boot Camp" at Columbia University in June 2020
- 2019 Marie W. Taubneck Award, Teratology Society
- 2019 Teratology Society Trainee Travel Award

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- 2019 Bern Schwetz Postdoctoral Scholar Travel Award, National Capitol Area Chapter Society of Toxicology
- 2019 2nd Place Postdoctoral Poster Presentation, National Capitol Area Chapter Meeting
- 2018 Teratology Society Trainee Travel Award
- 2018 Inhalation and Respiratory Specialty Section Postdoctoral Best Abstract Award, Society of Toxicology
- 2018 Metals Specialty Section Postdoctoral Research Award, Society of Toxicology
- 2018 Ethical, Legal, Forensic, and Social Issues Specialty Section Postdoctoral Award, Society of Toxicology
- 2018 JHU EHE Retreat Best Postdoctoral Poster Award
- 2017 Teratology Society Trainee Travel Award
- 2017 Occupational and Public Health Specialty Section Best Student Abstract Award, Society of Toxicology
- 2017 Women in Toxicology Vera Hudson & Elizabeth Weisburger Student Scholarship Fund Award, Society of Toxicology
- 2017 CVM-GSA Travel Award
- 2017 Selected to attend the APA Environmental Health Scholars Retreat
- 2016 CVM Graduate Student Advanced Developmental Training Award
- 2016 SOT Graduate Student Travel Support Award
- 2016 CVM-GSA Travel Award
- 2015 CVM Graduate Student Advanced Developmental Training Award
- 2015 Award for travel to U.S. China conference
- 2014 CVM-GSA Travel Award
- 2012 CVM-GSA Travel Award
- 2012 Burdock Group Food Safety Travel Award, Society of Toxicology

PROFESSIONAL ACTIVITIES

Leadership

- 2019-2021 Postdoctoral Representative, National Capitol Area Chapter, Society of Toxicology
- 2019-2021 Co-leader, Thomistic Institute, Johns Hopkins University Medical Campus
- 2019-2020 Postdoctoral Representative, Committee on Diversity Initiatives, Society of Toxicology
- 2018-2021 Co-chair, School of Public Health Committee, Johns Hopkins Postdoctoral Association
- 2017 President, Texas A&M University Women in Science and Engineering
- 2016 Peer Mentor, Society of Toxicology Undergraduate Diversity Program
- 2013-2014 Secretary, College of Veterinary Medicine Graduate Student Association
- 2013-2014 Student Representative, Interdisciplinary Faculty of Toxicology Executive Committee

Society Membership

- 2017-2021 Ad Hoc Member, Communications Coordination Committee, Society for Birth Defects Research and Prevention (SBDRP; formerly Teratology Society)

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2017-Present Member, SBDRP
2015-2017 Member, Texas A&M University Women in Science and Engineering
2015-2016 Member, City of Bryan Toastmasters Club
2013-Present Member, Society of Toxicology

OUTREACH

2019 Judge, Anne Arundel County Science Expo
2018 Judge, Anne Arundel County Science Expo
2017 Volunteer, Texas Science Olympiad
2017 Volunteer, Pebble Creek Elementary Science Night
2015 Presentation on Scientific Method and Public Health at local Middle School
2015 Volunteer, Texas A&M University Expand Your Horizons 6th-grade girls' conference
2014-2015 Presentation on *Hydra vulgaris* toxicity model to home school students

PRESENTATIONS

Webinar

March 2020 Invited speaker for Society for Birth Defects Research and Prevention. "Developmental Arsenic Exposure: Effects on Innate Immune Response."

Platform

Oct 2020 Invited Presentation, University of Houston Clear Lake. "A Tale of Two Developmental Immunotoxicants."
June 2020 Society for Birth Defects Research and Prevention Annual Meeting, Online. "Alterations in the Mouse Placenta After Pre-Conception and Prenatal Arsenic Exposure."
Jan 2020 Invited Presentation, Franciscan University. "A Tale of Two Developmental Immunotoxicants."
Dec 2019 Invited Presentation, University of Massachusetts Amherst. "A Tale of Two Developmental Immunotoxicants."
July 2019 IUTOX ICTXV Meeting, Honolulu, HI. "Lung Function and Immune Effects in Resident Lung Macrophages Following Prenatal Exposure to Sodium Arsenite."
June 2019 Teratology Society Annual Meeting, San Diego, CA. "Prenatal Exposure to Sodium Arsenite: Effects on Macrophages."

Poster

July 2022 Society for Birth Defects Research and Prevention Annual Meeting, Vancouver, BC. "Arsenic Exposure During Equivalent Second Trimester in C57BL/6 Mouse Model Leaves Long-Lasting Immune Alterations"
July 2021 Society for Birth Defects Research and Prevention Annual Meeting, Online. "Prenatal Arsenic Exposure and Gene Expression Alterations in Liver, Placenta, Heart, and Lung"
March 2021 Society of Toxicology Meeting, Online. "Effects of Arsenic Exposure on the Placenta and Amniotic Fluid in a Mouse Model"
March 2020 Society of Toxicology Meeting, Online. "Placental Alterations following Prenatal Arsenic Exposure and Relation to Long-Term Lung Immune Effects."

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- April 2019 National Capitol Area Chapter Society of Toxicology Spring Symposium, Washington, DC. "Lung Function and Immune Effects in Resident Lung Macrophages following Prenatal Exposure to Sodium Arsenite."
- March 2019 Society of Toxicology Meeting, Baltimore, MD. "Lung Function and Immune Effects in Resident Lung Macrophages Following Prenatal Exposure to Sodium Arsenite."
- June 2018 Teratology Society Meeting, Clearwater Beach, FL. "Prenatal and Early Life Exposure to Arsenic: Effects on Tuberculosis Pathogenesis."
- March 2018 Society of Toxicology Meeting, San Antonio, TX. "Prenatal and Early Life Exposure to Arsenic: Effects on Tuberculosis Pathogenesis."
- Jan 2018 JHU EHE Departmental Retreat, Baltimore, MD. "Prenatal and Early Life Exposure to Arsenic: Effects on Tuberculosis Pathogenesis."
- June 2017 Teratology Society Meeting, Denver, CO. "Strain-Dependent Inflammatory Responses in a Mouse Model of Intrauterine Particulate Matter Air Pollution Exposure."
- March 2017 Society of Toxicology Meeting, Baltimore, MD. "Strain-Dependent Inflammatory Responses in a Mouse Model of Intrauterine Particulate Matter Air Pollution Exposure."
- August 2016 American Chemical Society Meeting, Philadelphia, PA. "Physiologic and epigenetic alterations in offspring following prenatal exposure to particulate matter air pollution in two strains of mice."
- March 2016 Society of Toxicology Meeting, New Orleans, LA. "Strain differences in DNA methylation and hydroxymethylation following prenatal exposure to diesel exhaust particulate matter."
- July 2015 Meeting with Collaborators at Nanjing University School of the Environment, Nanjing, China. "Prenatal Air Pollution Exposure, Epigenetics, and Asthma."
- March 2014 Society of Toxicology Meeting, Phoenix, AZ. "Assessment of human exposures to fumonisin B₁ in Ghana using LC-MS/MS."
- March 2012 Society of Toxicology Meeting, San Fransisco, CA. "Modified hydra bioassay to evaluate combined effects of aflatoxin B₁ & fumonisin B₁."
- Oct 2015 TAMU Toxicology Seminar Series Presentation. "Epigenetic Regulation Following Prenatal Exposure to Air Pollution: Effects in C57Bl/6J and BALB/cJ Murine Model."
- Oct 2013 Lone Star Society of Toxicology Meeting. "Characterization and toxic response evaluation of five metallic nanomaterials in the cnidarian model, *Hydra vulgaris*."