CONTACT INFORMATION

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EDUCATION

2014	Texas A&M University College Station, TX	PhD	Toxicology
2010	Baylor University Waco, TX	BS	Biology

PROFESSIONAL EXPERIENCE

Academic Appointments and Research Experience

March 2020 - Present	The University of New Mexico College of Nursing Albuquerque, NM	Assistant Professor
June 2018 - March 2020	University of New Mexico College of Pharmacy Albuquerque, NM	Research Assistant Professor, Campen Laboratory, Mentor: Matthew J. Campen
October 2014 - May 2018	University of New Mexico College of Pharmacy Albuquerque, NM	IRACDA Postdoctoral Fellow, Campen Laboratory, Mentor: Matthew J. Campen
July 2010 - August 2014	Texas A&M University , TX	Toxicology Graduate Research Assistant, Timothy Phillips' Laboratory, Mentor: Dr. Timothy D. Phillips
August 2009 - May 2010	Baylor University , TX	Human Physiology Laboratory Teaching Assistant, Supervisor: Dr. Crystal Usenko

AWARDS, HONORS, AND FELLOWSHIPS

2023	UNM Albuquerque	Richardson Endowment, Received
2016	Society of Toxicology	Cardiovascular

		Specialty Section Travel Award, Received
2016	Society of Toxicology	Donald E. Gardner Education Award, Received
2014	Texas A&M University	George T. Edds Award - Outstanding Student in Toxicology, Received
2014	Society of Toxicology	Society of Toxicology Travel Award, Received
2013	Texas A&M University	CVM High Impact Achievement Award - First Author Publication, Received
2013	Texas A&M University	College of Veterinary Medicine (CVM)-Graduate Student Proposal Award ($5,000 in research funds), Received
2010	Texas A&M University	Regents Fellowship, Received
2010	Gulf Coast Society of Toxicology	Gulf Coast Society of Toxicology Travel Award, Received
2009	Baylor University	Summer Undergraduate Research Fellowship, Received
2009	Baylor University	Bob Gardner Research Award, Received
2008	Houston Endowment	Jesse H. and Mary Gibbs Scholars Award, Received

Professional & Leadership Development Activities

March 5, 2021	UNM Albuquerque, United States	CON Monthly Friday Faculty Forum, Leadership Development
October 2, 2020	CoN Albuquerque, United States	Faculty Forum, Leadership Development

RESEARCH PROGRAM NARRATIVE

Texas A&M University College of Veterinary Medicine (TAMU-CVM):

My doctoral training afforded me the opportunity to develop as a scientist under the guidance of my exception mentor, Dr. Timothy D. Phillips. Aflatoxin B_1 (AFB1) is a foodborne carcinogen that commonly contaminates corn and peanut crops and affects both livestock and human populations. Because of this, AFB_1 is a major issue for specific underserved populations in the United States, as well as in developing countries. My research identified that calcium montmorillonite, a dietary, edible clay, binds to AFB_1 in the gastrointestinal tract, thereby reducing systemic bioavailability, and additional reduces gastrointestinal inflammation in vivo. My project encompassed the philosophy of the One Health Initiative at TAMU. This research was both novel and applied and could potentially serve human and animal populations with both enteric disease and exposure to foodborne mycotoxins.

As a Graduate Research Assistant, I was also involved in the experimental design of clinical trials following AFB_1 exposure in collaboration with the University of Ghana [1]. My experience with these community-based interventions perpetuated my ongoing interest in translational science and public health. My doctoral studies led to four peer-reviewed publications and multiple poster and platform presentations at local and national conferences. These results also led to the funding of two pilot grants from TAMU. Also, I was awarded the CVM High Impact Achievement Award for 1st Author publications twice during my graduate career. I received funding from two different sources while attending TAMU: 1) the CVM Regents' Fellowship (granted to outstanding incoming graduate students) and 2) 2014 CVM Graduate Student Research Trainee Award, a proposal-based grant that provided pilot funding.

University of New Mexico Health Sciences Center (UNM-HSC)

My growing interest in mechanistic toxicology and bridging the gap between basic and translational science ultimately led me to Dr. Campen's research program on cardiorespiratory toxicity of air pollutants in the UNM-HSC. What attracted me to Dr. Campen's research was the emphasis on both basic toxicological research and human clinical studies. I have published eleven publications, four as first author, during my time as a Postdoctoral Fell and Research Assistant Professor. My first two primary publications focused on hypoxia-induced pulmonary hypertension following ozone (O_3) exposure [2] and serum-based inflammatory potential in patients with obstructive sleep apnea treated with and without CPAP therapy [3]. My research is currently focused on examining circulating vascular and neurovascular inflammatory potential following mine-site derived fugitive dust exposure. I have won multiple awards since the advent of my postdoctoral training, including the prestigious Donald E. Gardner Education Award (Society of Toxicology, SOT), the Cardiovascular Specialty Section Travel Award (SOT), the Best Postdoctoral Poster Presentation for Cardiovascular and Metabolic Research Day (UNM) and more recently, the Pathway to Independence Award (K99) from NIEHS (start: June 1, 2018).

I am involved in a number of collaborations with the UNM Environmental Health Signature program and our new Superfund Research and Training Center. Metabolic disease and chronic cardiovascular diseases such as hypertension are widespread among the Navajo and other Southwestern tribes. Our lab plays a crucial role in studying how inhaled meta-based particulates containing vanadium, nickel, uranium and arsenic from mine-site derived dust can contribute to atherosclerosis development and vascular disease [4]. Working in conjunction with other agencies such as the National Institute of Occupational Health and Safety (NIOSH) in Morgantown, WV, and Lovelace Respiratory Research Institute (LRRI) in Albuquerque, NM, has allowed for increased collaboration with other scientists both locally and nationally to address these pressing public health issues.

The sum of these experiences have amplified my desire to pursue a career as an independent

investigator at a research-intensive university. I am committed to biomedical innovation and the recent funding of my NIEHS K99 has solidified my desire to pursue an academic research-focused position.

Current Research and Future Directions

From the 1940s-1980s, over 500 corporate mines were established within the Southwestern United States in Arizona and New Mexico. As a result of erosion and improper reclamation, residents in the region have been exposed to environmental contaminants such as heavy and transition metals. Mining waste-derived metals, including uranium (U), vanadium (V), arsenic (As), and nickel (Ni), are among the most highly prevalent and toxic metals in this region. While health effects arising from ingestion (via plants, drinking water) have been extensively explored, inhalation as a route of exposure for mine site-derived metals has not been rigorously examined. There is an established link between airborne particulate matter (PM) exposure and vascular disease and we have recently demonstrated an association between mine site proximity and circulating serum-based inflammatory potential [5]. Additionally, there is a significantly higher incidence of vascular disease within Navajo Nation; the degree to which environmental contaminants add to this disease burden remains unknown. I have found significant vascular and neurological deficits in mice exposed to mine-site derived particulates. Based on these preliminary data, this deficit is likely due to blood brain barrier impairment and is potentially mediated by the RhoA/Rho kinase pathway.

<u>Given my background, as a trained environmental toxicologist, I plan to focus my research on four pivotal issues:</u>

1) Clinical and translational science serving underrepresented communities both domestically and internationally
2) Understanding how extracellular matrices impact cellular function and inflammation
3) Neurodegeneration and neurovascular toxicology related to environmental exposures
4) Bridging the gap between community health and mechanistic toxicology

In collaboration with Michigan State University, the AirCARE1 Mobile Air Quality Laboratory is currently deployed in the Southwestern United States to investigate health problems caused by particulate air pollution in rural Native American communities surrounding abandoned uranium mines. I joined the University of New Mexico in 2014 and have been a part of a growing Toxicology and Environmental Health program since arriving at this university. When I arrived at UNM, Environmental Health was still in its infancy, and I have personally experienced how exciting, motivating and deeply fulfilling it is to be a part of an expanding program. Our program at UNM now not only features a Superfund Research Project, but also an Environmental Health Signature Program. Upon researching the College of Nursing, I feel that with my research and teaching background I would be an excellent fit. Moreover, I am enthusiastic about contributing to environmental toxicology research within the College of Nursing.

Research Philosophy

Experimental design is one of the most critical components to scientific research; and I have always emphasized the upfront intellectual input prior to taking the plunge in the lab. I have taken part in a wide breadth of research designs, which has helped me develop the most appropriate strategies to address a given research question. My students and mentees all know how essential a hypothesis-driven approach is to crafting a complete, methodical, scientific idea. The questions drive the data, and more data drive ever-changing questions. We live in a time when scientific rigor and reproducibility are critical in successful translation of basic science into the clinic. The quality of research is often dictated by the available resources and also whether or not the results can be repeated. I strive to uphold a standard of transparency in

my laboratory so that any other lab may reproduce our experimental results. As a mentor, I have always made sure that my students are executing studies with a proper number of replicates based on our own studies or previous literature.

Community health and human studies can be both challenging and demanding. In my own experiences with Navajo Nation, I have found that community-based research tends to consume more time than controlled studies in the laboratory. It is necessary that the investigator not only methodically plan scientific studies, but also gain the trust of the community, which takes time. Setbacks can occur frequently, and must be met with critical thinking, patience, and alternative strategies. However, it is the community-based work that I've been a part of as a graduate student, postdoc, and Research Assistant Professor that have advanced my passion for toxicological research.

Multidisciplinary, or team science, will be essential for the growth of my research program, as well as for my continued development as a scientist. As a faculty member, I would be enthusiastic about establishing collaborations with investigators within the College of Nursing, and can easily identify potential interactions based on common research interests. Dr. Barbara Damron's research in health disparities among Native American populations is relevant to ongoing environmental toxicology research in our region. Dean Kasper's research regarding metal-induced carcinogenesis also synergizes with my current focus involving health effects from inhaled metal-based particulate matter. Toxicological research has long been a passion of mine, and it demands a multidisciplinary and collaborative approach to solve complex problems. I feel that given my expertise, I am well-suited to become a member of this College and look forward to further discussing this opportunity with you.

1. Mitchell, N.J., et al., Short-term safety and efficacy of calcium montmorillonite clay (UPSN) in children. 204 91(4): p 777-785.
2. Zychowski, K.E., et al., Hypoxia-induced pulmonary arterial hypertension augments lung injury and airway reactivity caused by ozone exposure. 2016. 305: p. 40-45.
3. Zychowski, K.E., et al., Serum from obstructive sleep apnea patients induces inflammatory responses in coronary artery endothelial cells. 2016. 254: p 59-66.
4. Zychowski, K.E., et al., Respirable Uranyl-Vanadate Containing Particulate Matter Derived from a Legacy Uranium Mine Site Exhibits Potentiated Cariopulmonary Toxicity. 2018: p kfy064.
5. Harmon, M.E., et al., Residential proximity to abandoned uranium mines and serum inflammatory potential in chronically exposed Navajo communities. Journal of Exposure Science and Environmental Epidemiology, 2017.

FUNDED RESEARCH & CREATIVE ACTIVITIES

Extramural

Zychowski, K. E. (Principal Investigator), Yu, X. (Co-Investigator), "Systemic Implications and Novel Mechanisms of Circulating Extracellular Vesicles Following Inhaled Exposures," Sponsored by National Institutes of Health, Federal, $2611000. (Funded: July 17, 2023 - May 31, 2028).

Zychowski, K. E. (Co-Principal), "Integration of Respirable Crystalline Mine Dust (RCMD) and Respirable Crystalline Silica (RCS) Physicochemistry and Toxicity Outcomes in an Occupational Risk Assessment Model," Sponsored by CDC/NIOSH, Federal, $190010. (Funded: September 1, 2021 - January 1, 2024).

Zychowski, K. E. (Principal Investigator), "Particulate Matter-induced Pulmonary Exosomes, the Lung-brain Axis," Sponsored by NIH / National Institutes of Health, Federal, $416625. (Funded: July 15, 2021 - July 14, 2023).

Zychowski, K. E. (Principal Investigator), "Neurovascular Consequences of Inhaled Uranium Mine-site Dust Exposure - Continuation," Sponsored by NIH / National Institutes of Health, Federal, $747000. (Funded: May 15, 2020 - April 30, 2023).

Zychowski, K. E. (Principal Investigator), "Neurovascular Consequences of Inhaled Uranium Mine-Site Dust Exposure," Sponsored by National Institute of Environmental Health Sciences, Federal, $160000. (Funded: June 2016 - May 2020).

Zychowski, K. E. (Fellow), Wandinger-Ness (Principal Investigator), "Institutional Research and Career Development Award for Academic Science Education and Research Training," Sponsored by National Institute of General Medical Sciences, Federal. (Funded: January 2016 - May 2018).

Zychowski, K. E. (Principal Investigator), "Uranium Miners Have Increased Cumulative Systemic Inflammatory Potential Compared to Non-uranium Miners," Federal, $25000. (Funded: February 1, 2018 - March 31, 2018).

Zychowski, K. E. (Principal Investigator), "Assessing Neurovascular Effects of Uranium Mine-site Derived PM exposures by Using a Toxicogenomics Approach," Sponsored by National Institute of Environmental Health Sciences (NIEHS), Federal, $13010. (Funded: January 2018 - March 2018).

Intramural

Ruyak, S., Kivlighan, K. T., Zychowski, K. E., "HSC Research Support Equipment Renovation Funding," Sponsored by University of New Mexico -Health Sciences, The University of New Mexico. (Funded: 2023 - Present).

Ruyak, S., Kivlighan, K. T., Zychowski, K. E., "HSC Research Support Equipment/Renovation Funding," Sponsored by University of New Mexico - Health Sciences, The University of New Mexico. (Funded: 2023 - Present).

Zychowski, K. E. (Co-Investigator), Lewis, J. L. (Principal Investigator), "UNM Metal Exposure Toxicity Assessment on Tribal Lands in the Southwest (METALS) Superfund Research Program," Sponsored by National Institute of Environmental Health Science, Federal, $6417714. (Funded: August 15, 2017 - March 31, 2022).

Zychowski, K. E. (Co-Investigator), Lewis, J. L. (Principal Investigator), "UNM Metal Exposure Toxicity Assessment on Tribal Lands in the Southwest (METALS) Superfund Research Program," Sponsored by National Institute of Environmental Health Science, Federal, $6996386. (Funded: August 15, 2017 - March 31, 2022).

Zychowski, K. E. (Principal Investigator), "Neurovascular Consequences of Inhaled Uranium Mine-site Dust Exposure," Sponsored by National Institute of Environmental Health Science, Federal, $171801. (Funded: June 1, 2018 - May 31, 2020).

Zychowski, K. E. (Principal Investigator), "Neurovascular Consequences of Inhaled Uranium

Mine-site Dust Exposure," Sponsored by National Institute of Environmental Health Science, Federal, $171801. (Funded: June 1, 2018 - May 31, 2020).

Zychowski, K. E. (Co-Investigator), Wandinger-Ness, A. (Principal Investigator), "Academic Science Education Research Training," Sponsored by National Institute of General Medical Sciences, Federal, $4269126. (Funded: September 1, 2014 - August 31, 2019).

SCHOLARSHIP & PUBLICATIONS

Peer-Reviewed Journal Articles

Young, T., Scieszka, D., Begay, J., Lucas, S., Herbert, G., Zychowski, K. E., Hunter, R., Salazar, R., Ottens, A., Erdely, A., Gu, H., Campen, M. (2023). Aging Influence on Pulmonary and Systemic Inflammation and Neural Metabolomics Arising from Pulmonary Multi-walled Carbon Nanotube Exposure in Apolipoprotein E-Deficient and C57BL/6 Female Mice.

Das, M., Salinas, V., LaBoeuf, J., Khan, R., Jacquez, Q., Camacho, A., Hovingh, M., Zychowski, K. E., Rezaee, M., Roghanchi, P., Rubasinghege, G. (2023). A Toxicological Study of the Respirable Coal Mine Dust: Assessment of Different Dust Sources within the Same Mine.

Erdei, E., Zhou, X., Shuey, C., Ass'ad, N., Page, K., Gore, B., Zhu, C., Kanda, D., Luo, L., Sood, A., Zychowski, K. E. (2023). Serum autoantibodies and exploratory molecular pathways in rural miners. *Elsevier*.

Lopez, K., Camacho, A., Jacquez, Q., Amistadi, M. K., Medina, S., Zychowski, K. E. (2022). Lung-Based, Exosome Inhibition Mediates Systemic Impacts following Particulate Matter Exposure. *Toxics, 10*.

Salinas, V., Das, M., Jacquez, Q., Camacho, A., Zychowski, K. E., Hovingh, M., Medina, A., Rubasinghege, G., Razaee, M., Baltrusaitis, J., Roghanchi, P. (2022). Characterization and Toxicity Analysis of Lab-Created Respirable Coal Mine Dust from the Appalachians and Rocky Mountains Regions. *MDPI*.

Young, T., Scieszka, D., Begay, J., Lucas, S., Herbert, G., Zychowski, K. E., Hunter, R., Salazar, R., Ottens, A., Erdely, A., Gu, H., Campen, M. J. (2022). Aging influence on pulmonary and systemic inflammation and neural metabolomics arising from pulmonary multi-walled carbon nanotube exposure in apolipoprotein E-deficient and C57BL/6 female mice. *Taylor and Francis*, 1-15.

Ass'ad, N., Shore, X., Myers, O., Camacho, A., Jacquez, Q., Pollard, C., Cook, L. S., Leng, S., Page, K., Sood, A., Zychowski, K. E. (2021). VCAM-1 Is Upregulated in Uranium Miners Compared to Other Miners.

El Hayek, E., Medina, S., Guo, J., Noureddine, A., Zychowski, K. E., Hunter, R., Velasco, C., Wiesse, M., Maestas-Olguin, A., Brinker, C. Jeffery., Brearley, A., Spilde, M., Howard, T., Lauer, F., Herbert, G., Mehdi Ali, A., Burchiel, S., Campen, M. J., Cerrato, J. Uptake and Toxicity of Respirable Carbon-Rich Uranium-Bearing Particles: Insights into the Role of Particulates in Uranium Toxicity.

Young, T. L., Mostovenko, E., Denson, J. L., Begay, J. G., Lucas, S. N., Herbert, G., Zychowski, K., Hunter, R., Salazar, R., Wang, T., Fraser, K., Erdely, A., Ottens, A. K., Campen, M. J. Pulmonary delivery of the broadspectrum matrix metalloproteinase inhibitor marimastat diminishes multiwalled carbon nanotubeinduced circulating bioactivity without reducing pulmonary inflammation.

Wilson, A., Velasco, C. A., Herbert, G. W., Lucas, S. N., Sanchez, B. N., Cerrato, J. M., Spilde, M., Li, Q.-Z., Campen, M. J., Zychowski, K. E. (2021). Mine-site derived particulate matter exposure exacerbates neurological and pulmonary inflammatory outcomes in an autoimmune mouse model. *Journal of Toxicology and Environmental Health, Part A, 84*(12), 503-517. http://dx.doi.org/10.1080/15287394.2021.1891488

Young, T. L., Mostovenko, E., Denson, J. L., Begay, J., Lucas, S. N., Herbert, G., Zychowski, K., Hunter, R., Salazar, R., Wang, T., Fraser, K., Erdely, A., Ottens, A. K., Campen, M. J. (in press). Role of Matrix Metalloproteinases in Multiwalled Carbon Nanotube-mediated Pulmonary and Systemic Inflammatory Activation.

Begay, J., Sanchez, B., Wheeler, A., Baldwin, Jr, F., Lucas, S., Herbert, G., Ordonez Suarez, Y., Shuey, C., Klaver, Z., Harkema, J. R., Wagner, J. G., Morishita, M., Bleske, B., Zychowski, K. E., Campen, M. J. (2020). Assessment of particulate matter toxicity and physicochemistry at the Claim 28 uranium mine site in Blue Gap, AZ. *Journal of toxicology and environmental health. Part A, 84*(1), 31-48.

Zychowski, K. E. (2020). Early Gestational Exposure to Inhaled Ozone Impairs Maternal Uterine Artery and Cardiac Function.

R. H., Kivlighan, K. T., Ruyak, S., Q. J., Zychowski, K. E. (2020). Angiogenesis in Wound Healing Following Pharmacological and Toxicological Exposures. *Current Pathobiology Reports, 8*, 99-109. https://link.springer.com/article/10.1007/s40139-020-00212-y

Zhou, X., Velasco, C., Sanchez, B., Lucas, S., Gardiner, A., Baldwin, F., Wheeler, A., Campen, M. J., Zychowski, K. E. (2020). Serum-borne factors alter cerebrovascular endothelial microRNA expression following particulate matter exposure near an abandoned uranium mine on the Navajo Nation.

Hoover, J. H., Bolt, A. M., Burchiel, S. W., Cerrato, J. M., Dashner-Titus, E., Erdei, E., Gonzalez Estrella, J., El Hayek, E., Hudson, L., Luo, L., MacKenzie, D., Medina, S., Schilz, J., Velasco, C., Zychowski, K. E., Lewis, J. (2020). A Transdisciplinary Approach for Studying Uranium Mobility, Exposure and Human Health Impacts on Tribal Lands in the Southwest, United States.

Young, T. L., Zychowski, K. E., Denson, J. L., Campen, M. J. (2019). Blood-brain barrier at the interface of air pollution-associated neurotoxicity and neuroinflammation. 295.

Zychowski, K. E., Wheeler, A., Sanchez, B., Harmon, M., Steadman Tyler, C. R., Herbert, G., Lucas, S. N., Ali, A. M., Avasarala, S., Kunda, N., Robinson, P., Muttil, P., Cerrato, J. M., Bleske, B., Smirnova, O., Campen, M. J. (2019). Toxic Effects of Particulate Matter Derived from Dust Samples Near the Dzhidinski Ore Processing Mill, Eastern Siberia, Russia. *Cardiovascular toxicology, 19*(5), 401-411.

Zychowski, K. E., Tyler CRS., Sanchez, B., Harmon, M., Liu, J., Irshad, H., McDonald, J. D.,

Bleske, B. E., Campen, M. J. (2019). Vehicular Particulate Matter (PM) Characteristics Impact Vascular Outcomes Following Inhalation. *Cardiovascular toxicology*.

Assad, N., Sood, A., Campen, M. J., Zychowski, K. E. (2018). Metal-Induced Pulmonary Fibrosis. *Current environmental health reports, 5*(4), 486-498.

Zychowski, K. E., Kodali, V., Harmon, M., Tyler, C. R., Sanchez, B., Ordonez Suarez, Y., Herbert, G., Wheeler, A., Avasarala, S., Cerrato, J. M., Kunda, N. K., Muttil, P., Shuey, C., Brearley, A., Ali, A. M., Lin, Y., Shoeb, M., Erdely, A., Campen, M. J. (2018). Respirable Uranyl-Vanadate-Containing Particulate Matter Derived From a Legacy Uranium Mine Site Exhibits Potentiated Cardiopulmonary Toxicity. *Toxicological sciences: an official journal of the Society of Toxicology, 164*(1), 101-114.

Zychowski, K. E., Harmon, M. E., Lewis, J., Miller, C., Hoover, J., Ali, A.-M. S., Shuey, C., Cajero, M., Lucas, S., Pacheco, B., Erdei, E. (2017). Residential proximity to abandoned uranium mines and serum inflammatory potential in chronically exposed Navajo communities. *Journal of Exposure Science and Environmental Epidemiology*.

Tyler, C. R., Zychowski, K. E., Sanchez, B. N., Rivero, V., Lucas, S., Herbert, G., Liu, J., Irshad, H., McDonald, J. D., Bleske, B. E., Campen, M. J. (2016). Surface area-dependence of gas-particle interactions influences pulmonary and neuroinflammatory outcomes. *Particle and fibre toxicology, 13*(1), 64.

Zychowski, K. E., Sanchez, B., Pedrosa, R. P., Lorenzi-Filho, G., Drager, L. F., Polotsky, V. Y., Campen, M. J. (2016). Serum from obstructive sleep apnea patients induces inflammatory responses in coronary artery endothelial cells. *Atherosclerosis, 254*, 59-66.

Zychowski, K. E., Lucas, S. N., Sanchez, B., Herbert, G., Campen, M. J. (2016). Hypoxia-induced pulmonary arterial hypertension augments lung injury and airway reactivity caused by ozone exposure. *Toxicology and applied pharmacology, 305*, 40-45.

Paffett, M. L., Zychowski, K. E., Sheppard, L., Robertson, S., Weaver, J. M., Lucas, S. N., Campen, M. J. (2015). Ozone Inhalation Impairs Coronary Artery Dilation via Intracellular Oxidative Stress: Evidence for Serum-Borne Factors as Drivers of Systemic Toxicity. *Toxicological sciences: an official journal of the Society of Toxicology, 146*(2), 244-53.

Zychowski, K. E., Elmore, S. E., Rychlik, K. A., Ly, H. J., Pierezan, F., Isaiah, A., Suchodolski, J. S., Hoffmann, A. R., Romoser, A. A., Phillips, T. D. (2015). Mitigation of colitis with NovaSil clay therapy. *Digestive diseases and sciences, 60*(2), 382-92.

Mitchell, N. J., Kumi, J., Aleser, M., Elmore, S. E., Rychlik, K. A., Zychowski, K. E., Romoser, A. A., Phillips, T. D., Ankrah, N. A. (2014). Short-term safety and efficacy of calcium montmorillonite clay (UPSN) in children. *The American journal of tropical medicine and hygiene, 91*(4), 777-85.

Zychowski, K. E., Hoffmann, A. R., Ly, H. J., Pohlenz, C., Buentello, A., Romoser, A., Gatlin, D. M., Phillips, T. D. (2013). The effect of aflatoxin-B1 on red drum (Sciaenops ocellatus) and assessment of dietary supplementation of NovaSil for the prevention of aflatoxicosis. *Toxins, 5*(9), 1555-73.

Books

Zychowski, K. E. (2023). Respirable coal mine dust research: Characterization and toxicity analysis based on dust sources. *Underground Ventilation*. CRC Press.

Zychowski, K. E., Zychowski, K., Denson, J., Campen, M. (2018). Blood-brain barrier at the interface of air pollution-associated neurotoxicity and neuroinflammation. *Role of inflammation in environmental neurotoxicity*.

Book Chapters

Hoover, J. H., Bolt, A. M., Burchiel, S., Cerrato, J. M., Dashner-Titus, E., Erdei, E., Gonzalez Estrella, J., El Hayek, E., Hudson, L. G., Luo, L., MacKenzie, D., Medina, S., Schilz, J. R., Velasco, C. A., Zychowski, K., Lewis, J. (2021). A Transdisciplinary Approach for Studying Uranium Mobility, Exposure, and Human Health Impacts on Tribal Lands in the Southwest United States. *A Transdisciplinary Approach for Studying Uranium Mobility, Exposure, and Human Health Impacts on Tribal Lands in the Southwest United States*. https://link.springer.com/chapter/10.1007/978-3-030-53893-4_6

Non-Peer-Reviewed Articles

Zychowski, K. E., Tyler CRS., Sanchez, B., Harmon, M., Liu, J., Irshad, H., McDonald, J. D., Bleske, B. E., Campen, M. J. (2019). Vehicular Particulate Matter (PM) Characteristics Impact Vascular Outcomes Following Inhalation. *Cardiovascular toxicology*.

Zychowski, K. E., Kodali, V., Harmon, M., Tyler, C. R., Sanchez, B., Ordonez Suarez, Y., Herbert, G., Wheeler, A., Avasarala, S., Cerrato, J. M., Kunda, N. K., Muttil, P., Shuey, C., Brearley, A., Ali, A. M., Lin, Y., Shoeb, M., Erdely, A., Campen, M. J. (2018). Respirable Uranyl-Vanadate-Containing Particulate Matter Derived From a Legacy Uranium Mine Site Exhibits Potentiated Cardiopulmonary Toxicity. *Toxicological sciences: an official journal of the Society of Toxicology, 164*(1), 101-114.

Harmon, M. E., Lewis, J. L., Miller, C. P., Hoover, J., Ali, A. S., Shuey, C., Cajero, M., Lucas, S., Zychowski, K. E., Pacheco, B., Erdei, E. O., Ramone, S., Nez, T., Gonzales, M., Campen, M. J. (2017). Residential proximity to abandoned uranium mines and serum inflammatory potential in chronically exposed Navajo communities. *Journal of exposure science & environmental epidemiology, 27*(4), 365-371.

Aragon, M. J., Topper, L., Tyler, C. R., Sanchez, B., Zychowski, K. E., Young, T., Herbert, G., Hall, P. R., Erdely, A., Eye, T., Bishop, L., Saunders, S. A., Muldoon, P. P., Ottens, A. K., Campen, M. J. (2017). Serum-borne bioactivity caused by pulmonary multiwalled carbon nanotubes induces neuroinflammation via blood-brain barrier impairment. *Proceedings of the National Academy of Sciences of the United States of America, 114*(10), E1968-E1976.

Tyler, C. R., Zychowski, K. E., Sanchez, B. N., Rivero, V., Lucas, S., Herbert, G., Liu, J., Irshad, H., McDonald, J. D., Bleske, B. E., Campen, M. J. (2016). Surface area-dependence of gas-particle interactions influences pulmonary and neuroinflammatory outcomes. *Particle and fibre toxicology, 13*(1), 64.

Zychowski, K. E., Sanchez, B., Pedrosa, R. P., Lorenzi-Filho, G., Drager, L. F., Polotsky, V. Y., Campen, M. J. (2016). Serum from obstructive sleep apnea patients induces inflammatory responses in coronary artery endothelial cells. *Atherosclerosis, 254*, 59-66.

Zychowski, K. E., Lucas, S. N., Sanchez, B., Herbert, G., Campen, M. J. (2016). Hypoxia-induced pulmonary arterial hypertension augments lung injury and airway reactivity caused by ozone exposure. *Toxicology and applied pharmacology, 305*, 40-45.

Paffett, M. L., Zychowski, K. E., Sheppard, L., Robertson, S., Weaver, J., Lucas, S. N., Campen, M. J. (2015). Ozone Inhalation Impairs Coronary Artery Dilation via Intracellular Oxidative Stress: Evidence for Serum-Borne Factors as Drivers of Systemic Toxicity. *Toxicological sciences: an official journal of the Society of Toxicology, 146*(2), 244-53.

Cung, H., Aragon, M. J., Zychowski, K. E., Anderson, J. R., Nawarskas, J. J., Roldan, C., Sood, A., Qualls, C., Campen, M. J. (2015). Characterization of a novel endothelial biosensor assay reveals increased cumulative serum inflammatory potential in stabilized coronary artery disease patients. *Journal of translational medicine, 13*, 99.

Zychowski, K. E., Elmore, S. E., Rychlik, K. A., Ly, H. J., Pierezan, F., Isaiah, A., Suchodolski, J. S., Hoffmann, A. R., Romoser, A. A., Phillips, T. D. (2015). Mitigation of colitis with NovaSil clay therapy. *Digestive diseases and sciences, 60*(2), 382-92.

Media Coverage and Interviews

Zychowski, K. E. (September 21, 2021). College of Nursing Promotional Commercial, Broadcast throughout New Mexico and the Western U.S. https://www.youtube.com/watch?v=fswp6iMTVFU

Zychowski, K. E. (February 2021). Air Pollution and COVID-19, KUNM N/A

Zychowski, K. E. (January 2021). Environmental Pollution a Key Health Factor, Albuquerque Journal https://www.abqjournal.com/2336979/unm-study-environmental-pollution-a-key-health-factor.html

Zychowski, K. E. (November 16, 2020). Air Pollution in the Southwestern United States and COVID-19, Alliance of Nurses for Healthy Environments

PRESENTATIONS

International

Zychowski, K. E. (November 2021). *Lung-Based Exosomal Inhibition Mediates Systemic Impacts Following Mine-site derived Particulate Matter Exposure*. Oral Presentation presented at International Mining Dust and Aerosol Research Conference, Penn State University, United States.

National

Zychowski, K. E. (February 13, 2019). *Toxicological Consequences of Inhaled Uranium Mine-site Derived Dusts*. Oral Presentation presented at Toxicology Seminar, University of Massachusetts at Amherst, Amherst, MA, United States.

Zychowski, K. E. (February 4, 2019). *Toxicological Consequences of Inhaled Uranium Mine-site Derived Dusts*. Oral Presentation presented at Toxicology Seminar, University of Utah, Salt Lake City, UT, United States.

Zychowski, K. E. (January 22, 2019). *Toxicological Consequences of Inhaled Uranium Mine-site Derived Dusts*. Oral Presentation presented at Toxicology Seminar, Wayne State University, Detroit, MI, United States.

Zychowski, K. E. (June 4, 2018). *Cardiovascular and Neurological Consequences from Claim 28, an Abandoned Uranium Mine*. Oral Presentation presented at Toxicology Seminar, Michigan State University, East Lansing, MI, United States.

Zychowski, K. E. (January 16, 2018). *Vascular and Pulmonary Consequences of Respirable Dusts Derived from Uranium Mines on the Navajo Nation*. Oral Presentation presented at International Biological and Chemical Threat Reduction, Sandia National Laboratories, Albuquerque, NM, United States.

(June 2017). *Pulmonary and vascular consequences of inhaled mine-site derived dusts*. Oral Presentation presented at IRACDA Conference.

Zychowski, K. E. (October 20, 2016). *Cardiovascular and Respiratory Effects from Pulmonary Exposure to Metal-Contaminated Dusts from an Abandoned Uranium Mine*. Oral Presentation presented at Toxicology Seminar, Michigan State University, East Lansing, MI, United States.

(June 2016). *Navajo mine dust exposure and subsequent toxicological implications*. Oral Presentation presented at IRACDA Conference.

Regional and Other Invited Presentations

Zychowski, K. E. *Careers' Panel*. Panel Presentation presented at Lone Star Society of Toxicology, Texas A&M University, United States.

Zychowski, K. E. (September 2021). *Research Overview*. Oral Presentation presented at UNM-College of Nursing Residency Week, UNM, United States.

Zychowski, K. E. (April 2021). *Cardiovascular Disease in Miners*. Oral Presentation presented at CTSC Synergy Meeting, UNM, United States.

(August 2019). *Mine-site derived dusts drive systemic lupus erythematosus*. Oral Presentation presented at College of Pharmacy UPN Symposium, University of New Mexico College of Pharmacy, Albuquerque, NM, United States.

Zychowski, K. E. (February 21, 2019). *Toxicological Consequences of Respirable Dusts Derived from Uranium Mines on the Navajo Nation*. Oral Presentation presented at Invited Seminar, Wayne State University, University of Utah, University of Massachusetts- Amherst.

Zychowski, K. E. (August 2018). *Effects from Airborne Metal-Enriched Particulate Matter from an Abandoned Uranium Mine*. Oral Presentation presented at College of Pharmacy UPN Symposium, University of New Mexico College of Pharmacy, Albuquerque, NM, United States.

Zychowski, K. E. (June 24, 2018). *Toxicological Consequences of Inhaled Mine-site Derived Dusts*. Oral Presentation presented at Michigan State.

Zychowski, K. E. (March 17, 2018). *Update on AirCARE1 exposures in Blue Gap Tachee, AZ*. Oral Presentation presented at K'e Conference, K'e Community Meeting, Shiprock, NM, United States.

Zychowski, K. E. (2016). *Interventions for Aflatoxicosis*. Oral Presentation presented at Faculty of Toxicology Symposium, Texas A&M University, College Station, TX, United States.

Zychowski, K. E. (November 3, 2016). *Understanding Exposure Pathways for Laguna Residents Living Near Jackpile Mine*. Oral Presentation presented at Community Meeting, Village of Paguate, Laguna, NM, United States.

Zychowski, K. E. (October 25, 2016). *Understanding Exposure Pathways for Laguna Residents Living Near Jackpile Mine*. Oral Presentation presented at Community Meeting, Village of Mesita, Laguna, NM, United States.

Zychowski, K. E. (August 21, 2016). *UNM METALS group- Current and Future Investigations*. Oral Presentation presented at Meeting with the Navajo Nation Uranium Mine Trustee (Sadie Hoskie), University of New Mexico, Albuquerque, NM, United States.

(March 2015). *Hypoxia-induced Pulmonary Arterial Hypertension Augments Ozone Lunch Injury and Airway Reactivity*. Oral Presentation presented at The Toxicologist.

Zychowski, K. E. (March 2015). *Mitigation of Colitis with NovaSil Clay Therapy*. Oral Presentation presented at The Toxicologist, Texas A&M University, College of Veterinary Medicine and Biomedical Sciences, College Station, TX, United States.

Zychowski, K. E. (March 2014). *The Effect of Aflatoxin B1 on Red Drum (Sciaenops ocellatus) and Assessment of Dietary Supplementation of NovaSil for the Prevention of*

Aflatoxicosis. Oral Presentation presented at The Toxicologist, Texas A&M University, College of Veterinary Medicine and Biomedical Sciences, College Station, TX, United States.

Zychowski, K. E. (March 2012). *Assessment of Surface Stability and Aflatoxin Sorption Capacity of Montmorillonite Clay Following Fermentation and Heat Treatment*. Oral Presentation presented at The Toxicologist, Veterinary Integrative Biosciences, Texas A&M University, College Station, TX, United States.

(March 2012). *Modified Hydra Bioassay to Evaluate Combined Effects of Aflatoxin B1 and Fumonisin B1.* Oral Presentation presented at The Toxicologist, Texas A&M University, Veterinary Integrative Biosciences, College Station, TX, United States.

Zychowski, K. E. (March 2012). *Responses of Tilapia to Contaminated Diets Supplemented with NovaSil.* Oral Presentation presented at The Toxicologist, Veterinary Integrative Biosciences, Texas A&M University, Wildlife and Fisheries, US Department of Agriculture, and Southern Plains Institute, College Station, TX, United States.

(March 2011). *AFB1 Binding Capacities of Excelerite Clay Samples from Panaca*. Oral Presentation presented at The Toxicologist, Nevada College of Veterinary Medicine, Texas A&M University, College Station, TX, United States.

In Process Scholarly Activities

Zychowski, Katherine E. MINE-SITE DERIVED PARTICULATE MATTER EXPOSURE EXACERBATES NEUROLOGICAL AND PULMONARY INFLAMMATORY OUTCOMES IN AN AUTOIMMUNE MOUSE MODEL. Current Status: Complete. (January 2021).

PROFESSIONAL ORGANIZATIONS

Service to Professional Organizations

May 2020 - May 2022	Society of Toxicology- Cardiovascular Specialty Section	Treasurer
April 2021	CDC/NIOSH	Reviewer/Referee
February 2021	NIH/NIEHS Zoom	Reviewer/Referee
January 2021	Centers for Disease Control and Prevention/ NIOSH Zoom	Reviewer/Referee
August 2020 - December 2020	NIH/NIEHS	Reviewer/Referee
September 2020	University of New Mexico ALBUQUERQUE	Program Organizer
July 2020	University of New Mexico ALBUQUERQUE	Program Organizer
2017 - 2018	Undergraduate Pipeline Network	Reviewer/Referee

2016 - 2018	Society of Toxicology	Cardiovascular Specialty Section Postdoctoral Representative
2016 - 2018	University of New Mexico, BIO Research Day Albuquerque, NM	Poster Judge
2017	Inhalation Respiratory Specialty Section, E-journal Club Albuquerque, NM	Facilitator
2017	Native American Environmental Health Equity Center	Grant Reviewer
2016	Women in Toxicology Awards	Committee Member
2016	Women in Science and Engineering (WISE) Conference College Station, TX	Workshop/Conference Organizer
2014	Metals and Carcinogenesis Conference	Poster Judge
2013 - 2014	Texas A&M Graduate Student Toxicology Student Representative	
2012 - 2013	Society of Toxicology, Committee for Diversity Initiatives	Committee Member
2012 - 2013	Graduate Student Council	Toxicology Program Representative
2012 - 2013	Graduate Student Association (Texas A&M University-College of Veterinary Medicine)	Treasurer
2012	Society of Toxicology	Undergraduate Peer Mentor

Service to Professional Publications

April 2021	CDC/NIOSH	Reviewer/Referee
2017 - 2018	Undergraduate Pipeline Network	Reviewer/Referee
2016	Women in Toxicology Newsletter	Editor

Memberships

	American Heart Association (AHA)
	American Thoracic Society (ATS)
	Society of Toxicology Specialty Sections: Women in Toxicology, Cardiovascular Toxicology, Inhalation and Respiratory Toxicology
	Society of Toxicology- Mountain West Regional Chapter
May 2016 - May 2018	Society of Toxicology

ACADEMIC SERVICE

The University of New Mexico College of Nursing

December 2022 - Present	Faculty Affairs Committee	Member
February 2021 - December 2022	Research and Scholarship Committee	Member
March 2021	Academic Admissions Committee (PhD)	Member
March 2020 - February 2021	Rotated through Committees	Member

PUBLIC/ COMMUNITY SERVICE

2015	New Mexico Regional Science Fair Albuquerque, NM	Judge
2015	Hoover Middle School Science Fair Albuquerque, NM	Volunteer

COMMUNITY ENGAGEMENT ACTIVITIES

February 2021	Peabody Mine, Grants, NM	Community Outreach at the Peabody Mine – Volunteer

TEACHING AND MENTORING

Current Teaching Responsibilities:

NURS 498: Honors Study Nursing I	Fall, 2021 Fall, 2021 Summer, 2021 Summer, 2021
NURS 600: Philosophy of Science	Summer, 2023 Summer, 2022

Other Instruction

June 2020 – August 2020	UNM - CoN United States	Shadowed Dr. Lavin for Research in Nursing online course Teaching Assistant

FACULTY MENTORING

March 2020 - Present	Research Advisor	Alexandra Camacho Bachelor's Student	Current Student, University of New Mexico
2022 - 2024	Research Advisor	Sydnee Yazzie PhD Candidate	Current Student
July 2023 - February 2024	Research Advisor	Kartika Wardhani Adjunct Faculty	Current Fellow
August 2021 - December 2021	Research Advisor	Vitoria Maximino Silva Bachelor's Student	Current Student
May 2021 - August 2021	Research Advisor	Keegan Lopez Bachelor's Student	Current Student

Visiting Faculty Supervised:

February 2021 - March 2021 Brenna Baird

TEACHING NARRATIVE

The impetus for accepting the IRACDA Fellowship at the University of New Mexico stemmed from a desire to cultivate my teaching ability and to mentor students in the classroom. A try departure from the status quo for postdoctoral scholars, this nationally-competitive, NIGMS-sponsored fellowship program provides individuals with foundational support to pursue teaching interests (25%) in addition to research (75%) during their tenure as Fellows in the program. One of the greatest joys in my career thus far has been the ability to lecture and create my own teaching materials. As a Fellow, I developed "active-learning" modules incorporated one a routine basis in the classroom. Active learning encourages students to engage with the content during the lecture, participate in the class and collaborate with other students. I have found that while in-class engagement is sometimes met with initial resistance, my students perform better on tests and quizzes when they are actively involved in the lecture rather than passively sitting in class. Learning through "osmosis" has never proven effective, and after reflecting on my own experience in the classroom, I believe the best way to reach students is to combine classical didactic lecturing, with active learning components during instruction.

As a Fellow, I had the honor of regularly lecturing in three distinct courses at Central New Mexico Community College: Microbiology, Anatomy and Physiology, and Evolutionary Medicine. Previously as a graduate student, I also had the pleasure to guest lecture in Basic Environmental Toxicology. Additionally, I acted as a postdoctoral facilitator for BIOM 657 - Advanced Topics in Cellular and Systems Physiology in Fall of 2018. As a scientist and educator, I am dedicated to teaching, as demonstrated by my past involvement in teaching both at the undergraduate and graduate level. I have been actively involved in scientific outreach activities throughout my career including the Undergraduate Peer Mentor Program (Society of Toxicology), Women in Science and Engineering (WISE-Texas A&M University), and involvement in the New Mexico Regional Science Fair.

Whether I am teaching at the undergraduate, graduate, or professional level I make sure that the material is challenging and that the students must critically think through real-world

problems and case studies. I have regularly lectured to pre-health and Pharm.D students, and I whole-heartedly believe demonstrating how science can be applied in a clinical setting has helped students during their rigorous coursework. Students can witness the translation into their future careers as scientists or healthcare providers, through a series of case studies and thought-provoking, clinically-relevant problems.

I have mentored a total of eleven students during my tenure at UNM. Although productivity varies among my students, all of my students have given scientific poster or oral presentations at research symposia while under my mentorship. Several of my students have demonstrated innovation and creativity in the laboratory and have continued onto prestigious graduate programs (Johns Hopkins, Yale) and have won numerous awards (UNM College of Pharmacy Fellowship, SACNAS Travel Award, Cardiovascular Research Day Awards). As a faculty member, I anticipate that my trainees will represent the UNM College of Nursing at local and national conferences with the highest standard of professional and scientific excellence. Though I will expect that students and postdocs in my laboratory need to fulfill their requirements of already-funded projects, as a professor, I would also encourage my trainees to develop their own scientific ideas, especially as they become more senior in my laboratory. I do not want my trainees to simply be in the lab continuously; they need time to read literature and critically think about research questions.

Finally, I am committed to diversity and believe that all students should have equal opportunity to openly pursue educational interests regardless of age, gender, sexual orientation, religion, ethnicity or socioeconomic background. Fostering an environment of inclusion and respect is essential to having a strong and dedicated department with satisfied trainees. The University of New Mexico is both a minority-serving and Hispanic-serving institution and the mentors, peers and mentees at our institution are from unique and culturally-diverse backgrounds. There are favorable outcomes that result from having a diverse workforce, and I hope to continue promotion diversity as a faculty member within the College of Nursing and the University of New Mexico.