

**Alicia M. Bolt Ph.D.**

*Assistant Professor, University of New Mexico, College of Pharmacy, Department of Pharmaceutical Sciences*

**Contact Information:**

Address:

UNM College of Pharmacy  
MSC09 5360  
I Univ of NM  
Albuquerque, NM 87131

Telephone: 505-272-9541

Email: ambolt@salud.unm.edu

**Research Interests:**

I have 14 years of research experience investigating how metals affect human health. Notably, my work has centered on how the metal tungsten accumulates in the bone, making it a site of long-term storage and toxicity within the bone marrow compartment, and extends beyond the bone niche to contribute to systemic pathologies. Due to a cohort of breast cancer patients accidentally exposed to tungsten, I conducted an animal study to investigate the effects of tungsten exposure on breast cancer progression and metastasis. Importantly, we found that tungsten drives breast cancer progression by enhancing metastasis in the lung niche through increasing the number of Cancer-associated Fibroblasts (CAFs) and Myeloid-derived Suppressor Cells (MDSCs) in the surrounding microenvironment. My research lab is currently investigating which cell types (CAFs, MDSCs, or both) and how (mechanism) tungsten targets these critical cellular components in the surrounding microenvironment in order to enhance breast cancer metastasis to the lung. Interestingly, both MDSCs and CAFs originate from bone marrow precursors, so I am interested in investigating if tungsten targets bone marrow precursors to drive breast cancer progression. In addition, I am extending my knowledge of how activated fibroblasts and immune cells drive tumor progression to investigate how exposure to tungsten particles can enhance pulmonary inflammation and alter lung fibroblasts leading to lung diseases and potentially lung cancer. In addition as part of the UNM Metals Superfund Research Program, I have been actively involved in research studies investigating how exposure to mixed-metal mine waste can induce immune dysregulation leading to disease outcomes using animal models.

**Education:**

University	Degree/Area of Study	Graduated
University of Northern Colorado Greeley, Colorado 1999-2003	B.S. Biological Sciences Emphasis: Human Biology Minor: Chemistry	May 2003
University of Arizona Tucson, Arizona 2006-2012	Ph.D. Pharmacology and Toxicology Dissertation Title: Arsenite Alters Lysosome-Mediated Degradation and the Autophagy Process	May 2012

	Leading to Immunosuppression in Human B-Lymphoblastoid Cell Lines	
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### Professional Appointments:

- Assistant Professor, University of New Mexico, College of Pharmacy, Department of Pharmaceutical Sciences, Albuquerque, New Mexico. Investigating how metals can drive tumor progression by targeting the tumor microenvironment. Metal-induced Immunotoxicity. Particularly, how stromal and immune cells from the bone can play a role in tumor progression and fibrosis (July 2018 - Present).
- Research Assistant Professor, University of New Mexico, College of Pharmacy, Department of Pharmaceutical Sciences, Dr. Scott Burchiel, Albuquerque, New Mexico. Investigating the interactions between arsenic and uranium-induced immunotoxicity in mouse models and humans (October 2017 – June 2018).
- Postdoctoral Fellow, University of New Mexico, College of Pharmacy, Department of Pharmaceutical Sciences, Dr. Scott Burchiel, Albuquerque, New Mexico. Investigating the interactions between arsenic and uranium-induced immunotoxicity in mouse models and humans (June 2017- October 2017).
- Postdoctoral Fellow, McGill University and the Lady Davis Research Institute, Montreal Canada. Under the direction of Dr. Koren Mann, investigating the potential role of tungsten in carcinogenesis and tumor progression using models of leukemia and breast cancer. I have also investigated the potential role of tungsten to alter bone biology by using both *in vitro* and animal models of bone remodeling (May 2012 – April 2017).
- Graduate student at the University of Arizona in the Pharmaceutical Sciences, Pharmacology/ Toxicology PhD program. I worked in a toxicogenomics lab under Dr. Walt Klimecki investigating the mechanism of arsenite-induced immunotoxicity in human B-lymphoblastoid cell lines, an in-vitro model of normal immune cells. My dissertation thesis was entitled: Arsenite alters lysosome-mediated degradation and the autophagy process leading to immunosuppression in human B-lymphoblastoid cell lines (August 2006 - May 2012).

### Mentoring:

**For each student, I have helped train/ mentor him or her in various scientific techniques and guide them in their own individual research projects. I was available to answer questions, help trouble shoot experiments and provide direction and support on experimental design and execution.**

- Daniel Sotelo, Undergraduate Student, 2007-2008
- Crystal Espinoza, Undergraduate, Summer 2008
- Randi Bryd, PharmD Student, 2008-2009

- Heather Bisbee, High School Student, Summer 2009
- Paul Severson, Rotating PhD Student, Fall 2009
- Ryan Canatsey, Rotating PhD Student, Fall 2010
- Massud Weiss, Undergraduate Student, Spring 2010
- Lochan Shah, High School Student, Summer 2010
- Alejandro Garcia Flores, Rotating PhD Student, Fall 2011
- Jerome Janick, Masters Student, Summer/ Fall 2012
- Louise Benarroch, Masters Student, Summer 2013
- Ting Hua Wu, Masters Student, Fall 2014 – 2016
- Hsiang Chou, Undergraduate Student, Summer 2016 - Fall 2016; Masters Student, Jan 2017 – April 2017
- Bradley Stevens, Undergraduate UPN Summer Student – Summer 2018
- Ashley Winters, PharmD Student, Lab Volunteer – Spring 2019 – Fall 2020
- Kara Burton, Undergraduate UPN Summer Student – Summer 2019
- Robyn Turner, Undergraduate UPN Summer Student, Summer 2020 (Virtual Project)
- Reda El Fatni, Masters Student, Summer 2020 (Review of Tungsten Inhalation Toxicology Literature, Virtual Project)
- Isabella Murphy, UNM BSGP Rotation Student, Fall 2020
- Cameron Chock, PharmD Student, Lab Volunteer – Spring 2019; Masters/PharmD Student – Spring 2020 – Present
- Victoria Balise, ASERT UNM School of Medicine, Postdoctoral Fellow, Summer 2019 – Present

#### **Thesis/Dissertation Committees:**

- Yoselin Ordonez Suarez- PharmD/MS Dual Degree      PI Matthew Campen      April 2019  
Final Defense Committee
- Russel Hunter – BSGP PhD Candidate                      PI Matthew Campen      Fall 2020 - Present
- David Scieszka – BSGP PhD Candidate                    PI Matthew Campen      Fall 2020 - Present
- Cameron Chock – COP Dual MS/PharmD Student      PI Alicia Bolt              Spring 2020 - Present

#### **Graduate Qualify Exam Committees:**

- Rosstin Ahmandian - BSGP                                      PI Tom Resta              January 2019
- Joshua DeAgüero - BSGP                                      PI Brent Wagner        May 2019
- Russell Hunter – BSGP    PI Matthew Campen      May 2019
- David Scieszka – BSGP    PI Matthew Campen      May 2020
- Grigorious Papageorgiou - BSGP                            PI Nikolaos Mellios      May 2020
- Marsha Bitsui – BSGP    PI Matthew Campen      Nov. 2020

### Teaching Experience:

- **PHRM 105: Introduction to Pharmacy Practice and Pharmaceutical Sciences - Drug Metabolism** - Spring 2019/Fall 2020 (1 Hr)
- **PHRM 301/801: Applied Biochemistry - Immunobiochemistry** – Fall 2018/2019 (2 Hrs), Fall 2020 (1 Hr)
- **PHRM 305/805: Pathophysiology and Immunology** – Innate and Adaptive Immunity, and Immunological Disease Pathophysiology - Fall 2020 (10 Hrs)
- **Co-Instructor of Record PHRM 305/805: Pathophysiology and Immunology** – Fall 2020
- **PHRM 825: Integrated Pharmacotherapy II** – Pharmacology of Estrogens and Progestins, Pharmacology of Osteoporosis Drugs, Pathophysiology and Pharmacology of Rheumatoid Arthritis – Fall 2019 (3 Hrs), Fall 2020 (5 Hrs)
- **PHRM 847: Integrated Pharmacotherapy VII** – Antibody-Based Cancer Therapies – Fall 2018 (0.5 Hrs) 2019 - 2020 (1 Hr)
- **PHRM 580: General Toxicology** – Immunotoxicology – Spring 2019 (1.5 Hrs)

### Leadership/Service and Community Involvement:

#### Leadership/Service.

- **Member of the Cellular and Molecular Basis of Disease Seminar Committee** – University of New Mexico (Fall 2020 – Present).
- **Member of the Biomedical Sciences Graduate Program Steering Committee** – University of New Mexico (Fall 2020 – Present).
- **Vice-President Elect for the Society of Toxicology Mountain West Regional Chapter**, (2020 – Present).
- **Member of the University of New Mexico, College of Pharmacy Curriculum Learning and Assessment Committee (CLAC)**, Albuquerque New Mexico (Spring 2020 – Present).
- **Member of the Biomedical Sciences Graduate Program Qualifying Exam Committee** - University of New Mexico (Spring 2019 – Present).
- **Member of the Biomedical Sciences Graduate Program Admission Committee** – University of New Mexico (Spring 2018 – Present).
- **UNM HSC Biomedical Sciences Graduate Program Student Research Day – Poster Judge**, University of New Mexico, Albuquerque, New Mexico (2019 & 2020)
- **UNM COP Research Day – Poster Judge**, University of New Mexico, Albuquerque New Mexico (2019).
- **UNM HSC Environmental Health Signature Program, UNM Metals Superfund Research Program Pilot Projects – Proposal Reviewer**, University of New Mexico, Albuquerque New Mexico (2019).
- **UNM HSC Comprehensive Cancer Center Recruitment Day- Poster Judge**, University of New Mexico, Albuquerque, New Mexico (2019).
- **Society of Toxicology Annual Meeting – Poster Session Chair Metals 1**, Baltimore, Maryland (2019).
- **Mountain West Society of Toxicology Regional Meeting – Poster Judge** (2018 & 2019).
- **UNM COP PharmD Admissions – Interviewer**, University of New Mexico, Albuquerque New Mexico (2018 & 2019).

- **UPN Undergraduate Summer Research Day – Poster Judge**, University of New Mexico, Albuquerque New Mexico (Summer 2018 & Summer 2019).
- **UPN Undergraduate Summer Research Program – Mentor**, University of New Mexico, Albuquerque New Mexico (Summer 2018 & Summer 2019).
- **UNM COP Dean of Assessment Search Committee – Member** (2018 – 2019).
- **Councilor for the Society of Toxicology Mountain West Regional Chapter**, (2018 – 2020).
- **Metals Toxicity and Carcinogenesis Conference – Poster Session Chair**, University of New Mexico, Albuquerque New Mexico (2018).
- **Postdoctoral Representative** for the Society of Toxicology Metals Specialty Section, International Organization (2013-2015).
- **Graduate Student Representative for the Department of Pharmacology and Toxicology**, University of Arizona, Tucson Arizona (2008 – 2010).
- **Keys High School Summer Science Internship Program-Mentor**, University of Arizona, Tucson Arizona (Summers 2008-2010).

### Community Involvement.

- **Christ Lutheran School Science Fair Advisory Board – Member and Judge**, Albuquerque, New Mexico (2018).
- **Volunteer at Local Community Kitchen** (2007 – 2017).
- **Volunteered with refugee outreach program, Tucson Refugee Ministry**, Tucson, Arizona (2007-2012).
- **Overseas Humanitarian and Leadership Project Volunteer**, Russia (2003-2005).

### Publications and Abstracts:

#### Peer-Reviewed Articles.

- Zhou X\*, Medina S\*, **Bolt AM**, Zhang H, Wan G, Xu H, Lauer FT, Wang SC, Burchiel SW, and Liu KJ. Inhibition of red blood cell development by arsenic-induced disruption of GATA-1. **Scientific Reports**. 2020 Nov 4; 10(1):19055. \* Co-first Authors.
- Chou H, Grant MP, **Bolt AM**, Guilbert C, Plourde D, Mwale F, and Mann KK. Tungsten increases sex-specific osteoclast differentiation in murine bone. **Tox Sci**. Accepted October 2020.
- Medina S, Lauer FT, Castillo EF, **Bolt AM**, Ali AS, Liu KJ, and Burchiel SW. Exposure to uranium and arsenic alter intraepithelial and innate immune cells in the small intestines of male and female mice. **TAAP**. 2020. Sept. 15; 403:115155.
- Guilbert C, Chou H, **Bolt AM**, Wu TH, Lou VM, Orthwein A, and Mann KK. A functional assay to assess toxicity during murine B cell development in vitro. **Curr Protoc Toxicol**. 2020 Mar; 83(1):e91.
- **Bolt AM\***, Medina S\*, Lauer FT, Liu KJ, and Burchiel SW. Minimal uranium immunotoxicity following a 60-day drinking water exposure to uranyl acetate in male and female C57BL/6J mice. **TAAP**. 2019 Jun 1;372:33-39. \*Co-first Authors.
- Wu TH\*, **Bolt AM\***, Chou H, Plourde D, De Jay N, Guilbert C, Young YK, Kleinman CL and Mann KK. Tungsten blocks B cell differentiation and proliferation through down-regulation of the IL-7 receptor signaling. **Tox Sci**. 2019 Jul 1;170(1):45-56. \* Co-first Authors.

- **Bolt AM**, Medina S, Lauer FT, Xu H, Ali AM, Jian K, and Burchiel SW. Uranium accumulates in the bone and kidney following an oral 60-day uranyl acetate exposure in male and female C57BL/6J mice. **Plos One**. 2018 Oct 24; 13(10).
- Cassidy R, VanderSchee, David Kuter, **Alicia M. Bolt**, Feng-Chun Lo, Renfei Feng, Juergen Thieme, Karen Wiegert-Chen, Koren K. Mann, D. Scott Bohle. Accumulation and transformation of tungstate in bone: In situ generation of robust and persistent polytungstate. **Communication Chemistry**. 2018 1:8 March 8<sup>th</sup>.
- Dahabieh MS, Di Pietro E, Ha Z, Gonçalves C, Nichol JN, **Bolt AM**, Dupéré-Richer D, Pettersson F, Mann KK, Braverman N, del Rincón SV, and Miller Jr WH. Peroxisomes protect lymphoma cells from HDAC inhibitor-mediated apoptosis. **Cell Death and Differentiation**. 2017 Jul 21.
- Baker AH, Wu TH, **Bolt AM**, Gerstenfeld LC, Mann KK, and Schlezinger JJ. Tributyltin alters the bone marrow microenvironment and suppresses B cell development. **ToxSci**. 2017 Apr 7 Epub.
- Ahn R, Sabourin V, **Bolt AM**, Hebert S, Totten S, DeJay N, Festa MC, Young C, Pawson T, Koromilas A, Muller WJ, Mann KK, Kleinman C, and Ursini-Siegel J. The ShcA adaptor dictates the balance between STAT-driven immune surveillance versus suppression and defines breast cancer sensitivity to immunotherapy. **Nature Communications**. 2017 Mar 9. 8:14638.
- Negro Silva LF, Lemaire M, Lemarie CA, Plourde, **Bolt AM**, Chiavatti C, Bohle DS, Slavkovich V, Graziano JH, Lehoux S, and Mann KK. Arsenic methylation is essential to arsenic-enhanced atherosclerosis. **Environ. Health Perspect**. 2017 Jul 5. 125(7).
- **Bolt AM** and Mann KK. Tungsten: An emerging toxicant, alone or in combination. **Curr. Environ. Health Rep**. 2016 Dec 3(4):405-415.
- **Bolt AM**, Grant MP, Wu TH, Kelly ADR, Flores Molina M, Plourde D, Negro Silva LF, Lemaire M, Schlezinger JJ, Mwale F, and Mann KK. Tungsten promotes sex-specific adipogenesis in the bone by altering differentiation of bone marrow resident mesenchymal stromal cells. **Toxicol. Sci**. 2016 Apr 150 (2): 333-46. Epub 2016 Feb 9.
- Krohn RM, Lemaire M, Negro Silva LF, Lemarie C, **Bolt A**, Mann KK, and Smits JE. High-selenium lentil diet protects against arsenic-induced atherosclerosis in a mouse model. **Journal of Nutritional Biochemistry**. 2016 Jan; 27:9-15 Epub 2015 Jul 26.
- Lemaire M, Negro Silva LF, Lemarie CA, **Bolt AM**, Flores Molina M, Krohn RM, Smits JE, Lehoux S, and Mann KK. Arsenic exposure increases monocyte adhesion to the vascular endothelium, a pro-atherogenic mechanism. **PLoS One**. 2015 Sep 2; 10(9).
- Patel BB, Kasneci A, **Bolt AM**, Di Lalla V, Di Iorio MR, Raad M, Mann KK, and Chalifour LE. Chronic exposure to bisphenol A reduces successful cardiac remodeling after an experimental myocardial infarction in male C57bl/6n mice. **Toxicol. Sci**. 2015 Jul;146(1):101-15 Epub 2015 April 9<sup>th</sup>.
- **Bolt AM**, Sabourin V, Flores Molina M, Police AM, Negro Silva LF, Plourde D, Lemaire M, Ursini-Siegel J, and Mann KK. Tungsten targets the tumor microenvironment to enhance breast cancer metastasis. **Toxicol. Sci**. 2015 Jan;143(1):165-77 Epub 2014 October 15<sup>th</sup>.
- **Bolt AM\***, Zhao F\*, Pacheco S, and Klimecki WT. 2012. Arsenite-induced autophagy is associated with proteotoxicity in human lymphoblastoid cells. **Toxicol. Appl. Pharmacol.**: 264(2): 255-261. \* Co-first Authors.
- **Bolt AM** and Klimecki WT. 2012. Autophagy in Toxicology: Self-consumption in times of stress and plenty. **Journal of Appl. Toxicology**: 32(7): 465-79. Epub 2012 February 15

- **Bolt AM**, Douglas RM, Klimecki WT. 2010. Arsenite exposure in human lymphoblastoid cell lines induces autophagy and coordinated induction of lysosomal genes. **Tox. Letters**: 199 (2): 153-159.
- **Bolt AM**, Byrd RM, Klimecki WT. 2010. Autophagy is the predominant process induced by arsenite in human lymphoblastoid cell lines. **Toxicol. Appl. Pharmacol.**:244 (3): 366-373.

### Book Chapters.

- Hoover JH, **Bolt AM**, Burchiel SW, Cerrato JM, Dashner-Titus E, Erdei E, Gonzalez-Estrella J, El Hayek E, Hudson LG, Luo L, Mackenzie D, Medina S, Schilz JR, Velasco CA, Zychowski K, and Lewis JL. A transdisciplinary approach for studying uranium mobility, exposure, and human health impacts on tribal land in the southwest, United States. In Malcolm Siegel, Olle Selinus and Robert Finkelman (Eds.), **Practical Applications of Medical Geology**. Springer. ISBN: 978-3-030-53893-4/978-3-030-53893-7. Accepted Oct. 2019. Anticipated Publication 2021.
- Young YK, **Bolt AM**, Ahn R and Mann KK. Analyzing the Tumor Microenvironment by Flow Cytometry. **Methods in Molecular Biology: Tumor Microenvironment**. Springer Protocols. ISBN: 978-1-4939-3801-8/978-1-4939-3799-8; 1458:95-110. 2016

### Abstracts.

- Abstract: Tungsten exposure enhances bone osteolysis in 4T1 breast cancer mice. Chock C, McVeigh C, and **Bolt AM**. (Submitted for the Society of Toxicology Annual Meeting March 2021).
- Abstract: Inhalation exposure to tungsten particulates induces early markers of pulmonary injury following acute exposure. Burton K, McVeigh C, Barr E, Herbert G, Hunter R, Medina S, Lucas S, Ali AM, Campen M, and **Bolt AM** (December 2020).
- Abstract: Exposures to uranium and arsenic alter intraepithelial and innate immune cells in the small intestine of male and female mice. Medina S, Lauer FT, Castillo EF, **Bolt AM**, Ali AMS, Liu KJ, and Burchiel SW. (December 2020).
- Abstract: Whale cells are resistant to Cr(VI)-Induced Loss of Homologous Recombination Repair. Lu K, Wise SS, Toyoda JH, Speer RM, **Bolt AM**, and Wise JP Sr. (November 2020).
- Abstract: Inhibition of red blood cell development by arsenic-induced disruption of GATA-1. Medina S, Zhou X, **Bolt AM**, Wan G, Xu H, Lauer FT, Wang SC, Burchiel SW, Liu KJ. (March 2020).
- Abstract: Acute effects of inhaled tungsten particles on the lung microenvironment. Burton K, McVeigh C, Barr E, Herbert G, Hunter R, Medina S, Lucas S, Ali AM, Campen M, and **Bolt AM** (March 2020).
- Abstract: DNA damage from regional metal-enriched particulate matter in A549 cells. Hunter R, **Bolt A**, Brearley A, Cerrato J, Velasco C, Weaver J, McChesney D, Muttill P, Herbert G, Campen M. and Zychowsky K (March 2020).
- Abstract: DNA damage from regional metal-enriched particulate matter in A549 cells. Hunter R, **Bolt A**, Brearley A, Cerrato J, Velasco C, Weaver J, McChesney D, Muttill P, Herbert G, Campen M. and Zychowsky K. (September 2019, November 2019).
- Abstract: Selective Inhibition of Erythropoiesis by environmental Arsenic Exposure through Interrupting GATA-1 Zinc Finger. Medina S, Zhou X, **Bolt AM**, Xu H, Lauer FT, Wang SC, Burchiel SW, and Liu KJ (September 2019).

- Abstract: Acute effects of inhaled tungsten particles on the lung microenvironment. Burton K, McVeigh C, Barr E, Herbert G, Hunter R, Medina S, Lucas S, Ali AM, Campen M, and **Bolt AM** (August 2019, September 2019).
- Abstract: Selective Inhibition of Erythropoiesis by environmental Arsenic Exposure through Interrupting GATA-1 Zinc Finger. Medina S, Zhou X, **Bolt AM**, Xu H, Lauer FT, Wang SC, Burchiel SW, and Liu KJ (April 2019).
- Abstract: Tungsten Enhances Cancer-Associated Fibroblast Activation from Bone Marrow-Derived Mesenchymal Stromal Cells. Stevens B and **Bolt AM** (March 2019, April 2019).
- Abstract: Low-Level Arsenic Exposure Impairs the In Vitro Differentiation of Mouse Bone Marrow Erythroid Progenitor Cells. Medina S, Zhou X, **Bolt AM**, Xu H, Lauer F, Liu K, and Burchiel S (March 2019).
- Abstract: Tungsten Enhances RANK-L-Induced Differentiation of Osteoclasts in Bone. Chou H, **Bolt AM**, Grant MP, Plourde D, Mwale F, and Mann KK (March 2019).
- Abstract: Minimal Uranium Immunotoxicity following a 60-day Drinking Water Exposure to Uranyl Acetate in Male and Female C57BL/6J Mice. **Bolt AM**, Medina S, Lauer FT, Liu KJ, and Burchiel SW (March 2019).
- Abstract: Fibrosis and Markers of Pain are Upregulated in the Intervertebral Disc Following Prolonged Tungsten Exposure: An in vivo Study – Co-Author on Poster Presented and Oral Seminar. Grant MP, Chou H, **Bolt AM**, Epure LM, Antoniou J, Mann KK, and Mwale F (Feb. 2019, June 2019).
- Abstract: Low-Level Arsenic Exposure Impairs the In Vitro Differentiation of Mouse Bone Marrow Erythroid Progenitor Cells. Medina S, Zhou X, **Bolt AM**, Xu H, Lauer FT, Liu KJ, and Burchiel SW (October 2018).
- Abstract: Tungsten enhances cancer-associated fibroblast activation from bone marrow-derived mesenchymal stromal cells. **Bolt AM** (October 2018).
- Abstract: Limited uranium immune tissue accumulation and immunotoxicity following a 60-day drinking water exposure to uranyl acetate in male and female C57BL/6J mice. **Bolt AM**, Medina S, Lauer FT, Xu H, Abdul-Mehdi Ali, Liu KJ, and Burchiel SW (September 2018, October 2018).
- Abstract: Tungsten enhances cancer-associated fibroblast activation and function from bone-marrow derived mesenchymal stromal cells. Bradley Stevens and **Alicia M. Bolt** (August 2018, Sept. 2018).
- Abstract: Evaluation of Uranium Drinking Water Exposures and Immunotoxicity in Mouse Models. **Alicia M. Bolt**, Sebastian Medina, Fredine T. Lauer, Huan Xu, Ke Jian Liu, and Scott W. Burchiel (March 2018).
- Abstract: Sodium Tungstate Alters Murine Osteoclast Biology. Hsiang Chou, **Alicia M. Bolt**, Michael P. Grant, Dany Plourde, Fackson Mwale, and Koren K. Mann. (March 2018).
- Abstract: Tungsten targets bone resorption by enhancing osteoclasts in the bone. **Alicia M. Bolt\***, Hsiang Chou\*, Michael P. Grant, Dany Plourde, Fackson Mwale, and Koren K. Mann (March 2017 and Sept. 2017). \* Co-first Authors
- Abstract: Investigating the effects of sex and age of mice on tungsten deposition and adipogenesis in the bone. **Alicia M. Bolt**, Ting Hua Wu, Dany Plourde, Luis Fernando Negro Silva, and Koren K. Mann (March 2016).
- Abstract: Tungsten alters b-cell differentiation through down-regulation of IL7R and PreBCR signaling Pathways. Ting Hua Wu, **Alicia M. Bolt**, Dany Plourde, Yoon Kow Young, Alexander D.R. Kelly and Koren K. Mann (March 2016).



- Abstract: Investigating the potential role of tungsten on leukemogenesis. **Alicia M. Bolt**, Ting Hua Wu, Dany Plourde, Alexander D.R. Kelly, and Koren K. Mann (November 2015).
- Abstract: Tungsten accumulates in the bone and enhances adipogenesis, potentially at the expense of bone formation. **Alicia M. Bolt** and Koren K. Mann (March 2015).
- Abstract: Tungsten enhances breast cancer metastasis to the lung by targeting the tumor microenvironment. **Alicia M. Bolt**, Valérie Sabourin, Manuel Flores Molina, Alice M. Police, Dany Plourde, Maryse Lemaire, Giuseppina Ursini-Siegel and Koren K. Mann (December 2014).
- Abstract: Investigating the effects of tungsten on bone marrow and the bone marrow microenvironment. **Alicia M. Bolt** and Koren K. Mann (May 2014).
- Abstract: Tungsten alters bone homeostasis by decreasing osteogenesis and increasing adipogenesis. **Alicia M Bolt**, Manuel Flores Molina, Alexander Kelly, and Koren K. Mann (March 2014).
- Abstract: Tungsten exposure increases lung metastases in an orthotopic murine breast cancer model. **Alicia M. Bolt**, Valérie Sabourin, Jerome Janiak, Alexander Kelly, Giuseppina Ursini-Siegel and Koren K. Mann (March 2013).
- Abstract: Tungsten exposure increases lung metastases in an orthotopic murine breast cancer model. **Alicia M. Bolt**, Valérie Sabourin, Jerome Janiak, Alexander Kelly, Maryse Lemaire, Giuseppina Ursini-Siegel and Koren K. Mann (November 2012).
- Abstract: Arsenite induces autophagy in response to protein aggregation in a GFP transduced cell line model. **Alicia M. Bolt**, Sandeep Anne, Fei Zhao, and Walter T. Klimecki (September 2011).
- Abstract: Autophagy: A cellular process strongly associated with arsenite-induced immunotoxicity in human lymphoblastoid cell lines. **Alicia M. Bolt**, Randi M. Douglas, Walter T. Klimecki (March 2011).
- Abstract: Autophagy: a cellular process strongly associated with arsenite-induced immunotoxicity in human lymphoblastoid cell lines. **Alicia M. Bolt**, Randi M. Douglas, and Walter T. Klimecki (September 2010).
- Abstract: Autophagy: a key mechanism in arsenite-induced cytotoxicity in human lymphoblastoid cell lines. **Alicia M. Bolt**, Randi M. Byrd, and Walter T. Klimecki (March 2010).
- Abstract: Human individual variation in susceptibility to arsenic-induced cytotoxicity. **Alicia Bolt**, Paul Severson, and Walt Klimecki (March 2009).
- Abstract: Human individual variation in susceptibility to arsenic-induced apoptosis. **Alicia Bolt**, Paul Severson, and Walt Klimecki (Oct. 2008).
- Abstract: Quantitative analysis of AS3MT expression in human adrenal and liver tissue.
- Paulina Gomez-Rubio, **Alicia Bolt**, Ernesto Cantu-Soto, and Walt Klimecki (April 2007).

### Seminars and Posters Presented:

#### Seminars.

- 10/2020 Seminar – Investigating the Role of Fibroblast Activation in Tungsten-enhanced Breast cancer metastasis to the Lung Niche. UNM Comprehensive Cancer Center – Cell and Molecular Oncology Data Talks, Albuquerque, NM.

- 09/2019 Seminar - Acute Effects of Inhaled Tungsten Particles on the Lung Microenvironment. Department of Pharmaceutical Sciences Departmental Seminar Series, Albuquerque, NM, UNM.
- 06/2019 Seminar - Fibrosis and Markers of Pain are Upregulated in the Intervertebral Disc Following Prolonged Tungsten Exposure: An in vivo Study – Co-author.
- 02/2019 Seminar - Department of Biology Seminar Series: Tungsten: An Emerging Toxicant. Socorro, NM, New Mexico Tech.
- 10/2018 Seminar - Metals Toxicity and Carcinogenesis Meeting. Albuquerque NM. Tungsten enhances cancer-associated fibroblast activation from bone marrow-derived mesenchymal stromal cells.
- 09/2018 Seminar-CTST Synergy Meeting – Albuquerque NM. Metals in Biology and Medicine CORBE. Title Tungsten and Breast Cancer: Impact of the Tumor Microenvironment.
- 09/2018 Seminar, NIEHS-Superfund Research Program Webinar.
- 08/2018 Seminar, NIEHS- Superfund Research Program – Program and External Advisory Board Visit – Title: Biological Project 2 Mechanisms of Immune Dysregulation Produced by Uranium, Arsenic, and Metal Mixtures.
- 07/2018 Seminar, Navajo Nation Trustee 2 site visit. Albuquerque NM.
- 04/2018 Seminar, K'e Conference, Navajo Nation Community Talk, Kayenta AZ: Animal Models Help to Evaluate Uranium Immunotoxicity.
- 01/2018 Seminar, University of New Mexico, College of Pharmacy, Albuquerque, NM: Investigating the Toxicity of Metals Found in the Southwest.
- 01/2017 Seminar, University of New Mexico, College of Pharmacy, Albuquerque, NM: When tungsten hits the bone.
- 09/2016 Seminar, Lady Davis Institute for Medical Research, Montreal, QC, Molecular and Regenerative Medicine Seminar Series: The toxic effects of metal exposure. With Koren K. Mann
- 07/2016 Seminar, Louisiana State University, Department of Biomedical Sciences, College of Veterinary Medicine, Baton Rouge, LA: Tungsten enhances breast cancer metastasis to the lung by amplifying the tumor microenvironment.
- 11/2015 Seminar, Lady Davis Institute for Medical Research, Montreal QC, Postdoctoral Fellow Seminar Series: Tungsten enhances adipogenesis in the bone by altering mesenchymal stromal cell differentiation.
- 05/2015 Seminar, Lady Davis Institute Research Day, Montreal QC: Tungsten enhances breast cancer metastasis to the lung by targeting the tumor microenvironment.
- 03/2015 Seminar, Symposium Presentation, Society of Toxicology Annual Meeting, San Diego CA: Tungsten accumulates in the bone and enhances adipogenesis, potentially at the expense of bone formation.
- 11/2014 Seminar Lady Davis Institute for Medical Research, Montreal QC, Postdoctoral Fellow Seminar Series. The role of tungsten in breast cancer metastasis.
- 11/2014 Seminar Lady Davis Institute for Medical Research, Montreal QC, Cancer Research Seminar Series. Tungsten targets the tumor microenvironment to enhance breast cancer metastasis.
- 04/2013 Seminar Lady Davis Institute for Medical Research, Montreal QC, Postdoctoral Fellow Seminar Series. Investigating the potential role of tungsten in breast cancer progression and metastasis.

- 04/2012 Final Oral Defense, PhD Dissertation, Department of Pharmacology and Toxicology, University of Arizona, Tucson AZ: Arsenite alters lysosome-mediated degradation and the autophagy process leading to immunosuppression in human B-lymphoblastoid cell lines.
- 05/2011 Seminar McGill University, Montreal Canada: Investigating individual variation in susceptibility to arsenic-induced immunotoxicity.
- 10/2010 Departmental Seminar, Department of Pharmacology and Toxicology, University of Arizona, Tucson AZ: Investigating individual variation in susceptibility to arsenic-induced immunotoxicity.
- 09/2010 IGERT Program Seminar, University of Arizona, Tucson AZ: Investigating individual variation in susceptibility to arsenic-induced immunotoxicity.
- 11/2009 Departmental Seminar, Department of Pharmacology and Toxicology, University of Arizona, Tucson AZ: Autophagy in arsenite-induced cytotoxicity.
- 02/2009 Departmental Seminar, Department of Pharmacology and Toxicology, University of Arizona, Tucson AZ: Human individual variation in susceptibility to arsenic-induced cytotoxicity.
- 04/2008 Departmental Seminar, Department of Pharmacology and Toxicology, University of Arizona, Tucson AZ: Modeling gene by environment interactions: towns in a tube.

#### **Poster Presentations.**

- 12/2020 Poster Presentation for the Superfund Research Center Annual Meeting 2020. Virtual e-poster. Inhalation exposure to tungsten particulates induces early markers of pulmonary injury following acute exposure.
- 12/2020 Poster Presentation for the Superfund Research Center Annual Meeting 2020. Virtual e-poster. Exposure to uranium and arsenic alter intraepithelial and innate immune cells in the small intestine of male and female mice. Co-author.
- 11/2020 Poster Presentation for the Ohio Valley Society of Toxicology Regional Meeting 2020. Virtual e-poster. Whale cells are resistant to Cr(VI)-Induced Loss of Homologous Recombination Repair. Co-author
- 03/2020 Poster Presentation for the Annual Society of Toxicology meeting. Virtual e-poster. Acute effects of inhaled tungsten particles on the lung microenvironment.
- 11/2019 Poster Presentation. UNM Health Sciences Center Comprehensive Cancer Center Research Day & Recruitment Event. DNA damage from regional metal-enriched particulate matter in A549 cells. Co-author
- 09/2019 Poster Presentation for the Mountain West Society of Toxicology Annual Meeting, Fort Collins, CO. DNA damage from regional metal-enriched particulate matter in A549 cells. Co-author
- 09/2019 Poster Presentation for the Mountain West Society of Toxicology Annual Meeting Fort Collins, CO. Acute effects of inhaled tungsten particles on the lung microenvironment.
- 09/2019 Poster Presentation for Mountain West Society of Toxicology Annual Meeting, Fort Collins, CO. Selective Inhibition of Erythropoiesis by environmental Arsenic Exposure through Interrupting GATA-1 Zinc Finger. Co-author
- 06/2019 Poster Session for Undergraduate Research Pipeline Research Day, UNM, Albuquerque NM. Acute effects of inhaled tungsten particles on the lung microenvironment.

- 04/2019 Poster Presentation for the UNM College of Pharmacy Research Day, Albuquerque NM. Selective Inhibition of Erythropoiesis by environmental Arsenic Exposure through Interrupting GATA-1 Zinc Finger. Co-Author
- 04/2019 Poster Presentation for the UNM College of Pharmacy Research Day, Albuquerque NM. Tungsten Enhances Cancer-Associated Fibroblast Activation from Bone Marrow-Derived Mesenchymal Stromal Cells.
- 03/2019. Poster Presentation. Annual Society of Toxicology meeting, Baltimore MD. Tungsten Enhances Cancer-Associated Fibroblast Activation from Bone Marrow-Derived Mesenchymal Stromal Cells.
- 03/2019. Poster Presentation. Annual Society of Toxicology meeting, Baltimore MD. Low-Level Arsenic Exposure Impairs the In Vitro Differentiation of Mouse Bone Marrow Erythroid Progenitor Cells. Co-author
- 03/2019. Poster Presentation. Annual Society of Toxicology meeting, Baltimore MD. Tungsten Enhances RANK-L-Induced Differentiation of Osteoclasts in Bone. Co-author
- 03/2019. Poster Presentation. Annual Society of Toxicology meeting, Baltimore MD. Minimal Uranium Immunotoxicity following a 60-day Drinking Water Exposure to Uranyl Acetate in Male and Female C57BL/6J Mice.
- 02/2019. Poster Presentation. Orthopaedic Research Society Conference: Fibrosis and Markers of Pain are Upregulated in the Intervertebral Disc Following Prolonged Tungsten Exposure: An in vivo study. Co-author
- 10/2018. Poster Presentation – Metals Toxicity and Carcinogenesis Meeting: Low-Level Arsenic Exposure Impairs the In Vitro Differentiation of Mouse Bone Marrow Erythroid Progenitor Cells. Co-author
- 10/2018. Poster Presentation – Metals Toxicity and Carcinogenesis Meeting: Limited uranium immune tissue accumulation and immunotoxicity following a 60-day drinking water exposure to uranyl acetate in male and female C57BL/6J mice.
- 09/2018. Poster Presentation. Mountain West Society of Toxicology Annual meeting, Phoenix AZ. Low-Level Arsenic Exposure Impairs the In Vitro Differentiation of Mouse Bone Marrow Erythroid Progenitor Cells. Co-author
- 09/2018. Poster Presentation. Mountain West Society of Toxicology Annual meeting, Phoenix AZ. Tungsten enhances cancer-associated fibroblast activation from bone marrow-derived mesenchymal stromal cells.
- 09/2018. Poster Presentation. Mountain West Society of Toxicology Annual meeting, Phoenix AZ. Limited uranium immune tissue accumulation and Immunotoxicity following a 60-day drinking water exposure to uranyl acetate in male and female C57BL/6J mice.
- 08/2018 Poster Presentation. Undergraduate Research Pipeline Research Day, UNM, Albuquerque NM. Tungsten enhances cancer-associated fibroblast activation and function from bone-marrow derived mesenchymal stromal cells.
- 08/2018 Poster Session for New Mexico INBRE Conference. Albuquerque NM. Tungsten enhances cancer-associated fibroblast activation and function from bone-marrow derived mesenchymal stromal cells.
- 04/2018 Poster Presentation for the UNM College of Pharmacy Research Day, Albuquerque NM: Evaluation of Uranium Drinking Water Exposures and Immunotoxicity in Mouse Models.
- 03/2018 Poster Presentation for the Annual Society of Toxicology meeting, San Antonio TX: Evaluation of Uranium Drinking Water Exposures and Immunotoxicity in Mouse Models.

- 03/2018 Poster Presentation for the Annual Society of Toxicology meeting, San Antonio TX: Sodium Tungstate Alters Murine Osteoclast Biology. Co-author
- 09/2017 Poster Presentation for the Mountain West Society of Toxicology Chapter Meeting, Albuquerque NM: Tungsten targets bone resorption by enhancing osteoclasts in the bone.
- 03/2017 Poster Presentation for the Annual Society of Toxicology meeting, Baltimore MA: Tungsten targets bone resorption by enhancing osteoclasts in the bone.
- 03/2016 Poster Presentation for the Annual Society of Toxicology meeting, New Orleans LA: Tungsten enhances adipogenesis in the bone by altering mesenchymal stromal cell differentiation.
- 11/2015 Poster Presentation for the Canadian Cancer Research Association Meeting, Montreal QC: Investigating the potential role of tungsten on leukemogenesis.
- 10/2015 Poster Presentation Global Health Day, McGill University, Montreal QC: Tungsten enhances breast cancer metastasis to the lung by targeting the tumor microenvironment.
- 05/2015 Poster Presentation for the Cole Foundation Research Celebration Day, Montreal QC: Investigating the potential role of tungsten on leukemogenesis.
- 12/2014 Poster Presentation for the Canadian Society of Toxicology Meeting, Ottawa ON: Tungsten enhances breast cancer metastasis to the lung by targeting the tumor microenvironment.
- 05/2014 Poster Presentation for the Lady Davis Institute Research Day, Montreal QC: Tungsten alters bone homeostasis by decreasing osteogenesis and increasing adipogenesis
- 05/2014 Poster Presentation for the Cole Foundation Research Celebration Day, Montreal QC: Investigating the effects of tungsten on bone marrow and the bone marrow microenvironment.
- 03/2014 Poster Presentation for the Annual Society of Toxicology meeting, Phoenix AZ: Tungsten alters bone homeostasis by decreasing osteogenesis and increasing adipogenesis.
- 03/2013 Poster Presentation for the Annual Society of Toxicology meeting, San Antonio TX: Tungsten exposure increases lung metastases in an orthotopic murine breast cancer model.
- 11/2012 Poster Presentation for the Canadian Society of Toxicology Meeting, Montreal QC: Tungsten exposure increases lung metastases in an orthotopic murine breast cancer model.
- 09/2011 Poster Presentation for Mountain West Society of Toxicology meeting, Breckinridge CO: Arsenite induces autophagy in response to protein aggregation in a GFP transduced cell line model.
- 05/2011 Poster Presentation for IGERT Symposium, University of Arizona, Tucson AZ: Autophagy: a cellular process strongly associated with arsenite-induced immunotoxicity in human lymphoblastoid cell lines
- 03/2011 Poster Presentation for Annual Society of Toxicology meeting, Washington DC: Autophagy: a cellular process strongly associated with arsenite-induced immunotoxicity in human lymphoblastoid cell lines.
- 10/2010 Poster Presentation for Frontiers in Biomedical Research Poster Forum, University of Arizona, Tucson AZ: Autophagy: a cellular process strongly associated with arsenite-induced immunotoxicity in human lymphoblastoid cell lines.
- 09/2010 Poster Presentation for Mountain West Society of Toxicology meeting, Dove Mountain, Tucson AZ: Autophagy: a cellular process strongly associated with arsenite-induced immunotoxicity in human lymphoblastoid cell lines.
- 03/2010 Poster Presentation for Annual Society of Toxicology meeting, Salt Lake City UT: Autophagy: a key mechanism in arsenite-induced cytotoxicity in human lymphoblastoid cell lines.

- 03/2009 Poster Presentation for Annual Society of Toxicology meeting, Baltimore MD: Human individual variation in susceptibility to arsenic-induced cytotoxicity.
- 10/2008 Poster Presentation for Mountain West Society of Toxicology meeting, University of Utah, Salt Lake City UT: Human individual variation in susceptibility to arsenic-induced apoptosis.
- 04/2007 Poster Presentation for SWEHSC Science Symposium, University of Arizona, Tucson AZ: Quantitative analysis of AS3MT expression in human adrenal and liver tissue.

**Affiliations/ Organization Membership:**

- University of New Mexico Comprehensive Cancer Center Immunology Focus Group Member (2020 – Present)
- University of New Mexico Comprehensive Cancer Center Member, (2018 – Present)
- University of New Mexico METAL Superfund Research Program Center Member (2017 – Present)
- University of New Mexico Health Sciences Center Environmental Health Sciences Signature Program Member (2017 – Present)
- Society of Toxicology (2009 - Present); Member of the Mountain West Regional Chapter, the Immunotoxicology, Metals, and Carcinogenesis Specialty Sections, and Women in Toxicology Special Interest Group.
- Vice - President Elect for the Mountain West Regional Chapter Leadership Board, Society of Toxicology (2020 – Present)
- Councilor for the Mountain West Regional Chapter Leadership Board, Society of Toxicology (2018 – 2020)
- Postdoctoral Representative for the Metals Specialty Section Leadership Board, Society of Toxicology (2013- 2015)
- American Society for Pharmacology and Experimental Therapeutics (2009 - 2010)
- American Association for the Advancement of Science (AAAS) Member, (2007 - 2010)

**Journal Peer-Reviewer:**

- Toxicological Sciences (2015- Present)
- Toxicology (2015- Present)
- Toxicology and Applied Pharmacology (2017 – Present)
- Trend in Cancer (2018 – Present)
- Environmental Research (2018 – Present)
- Environmental Health Perspectives (2018 – Present)
- Regulatory Toxicology and Pharmacology (2019 – Present)
- Journal of Biochemical and Molecular Toxicology (2019 – Present)
- Medicine in Drug Discovery (2020 – Present)
- J of Toxicology and Environmental Health (2020 – Present)
- Toxicological Research (2020 – Present)
- Aging, Metabolism, and Redox Biology (2020 – Present)

**Honors/Awards:**

- UNM College of Pharmacy Team Science Pilot Award Recipient. Dec. 2020 (\$20,000, 1-year funding).
- Named Regent's Lecturer for the University of New Mexico, College of Pharmacy (2020 – 2023)
- UNM CCC American Cancer Society Institutional Research Pilot Award Recipient. Sept. 2019 (\$30,000. 1-year funding).
- 1st Place, Best Research Assistant Professor, Staff Poster Award, UNM College of Pharmacy Research Day (2018)
- UNM College of Pharmacy Pilot Award Recipient. Dec. 2017 (\$10,000, 1-year funding).
- Best Postdoctoral Poster Presentation, Mountain West Society of Toxicology, Regional Meeting, \$100 (2017)
- Best Postdoctoral Publication of the Year Award, Society of Toxicology Postdoctoral Committee, \$250 (2016)
- 1<sup>st</sup> place Best Student/Postdoctoral Research Presentation Award, Lady Davis Institute for Medical Research (LDI) Research Day, \$600 (2015)
- 1<sup>st</sup> place Postdoctoral Research Award, Society of Toxicology Metals Specialty Section, \$250 (2015)
- 2<sup>nd</sup> place Postdoctoral Research Award, Society of Toxicology Metals Specialty Section, \$100 (2014)
- Cole Foundation Postdoctoral Training Fellowship Recipient, Montreal, QC (2013)
- MICRTP Postdoctoral Research Fellowship Recipient, McGill University (2012)
- Society of Toxicology Travel Award, \$1000 (2011)
- Integrative Graduate Education and Research Traineeship (IGERT) Fellow, University of Arizona (2011)
- 1<sup>st</sup> place Graduate Student Research Award, Society of Toxicology Metals Specialty Section, \$250 (2010)
- PEO Scholars Award Nominee for the University of Arizona Chapter (2010)
- NIEHS Gene by Environment Interaction Training Grant Recipient, University of Arizona, Tucson (2009)
- Mountain West Society of Toxicology Travel Award (2008)
- NIEHS Toxicology and Toxicogenomics Training Grant Recipient, University of Arizona, Tucson (2008)

### **Research Support:**

#### **Ongoing Support**

- P20GM130422-01A1: University of New Mexico Center for Metal in Biology and Medicine. Project Title: Tungsten and Breast Cancer: Impact of the Tumor Microenvironment, Role: Mentored PI, NIH/NIGMS, \$175,000/yr. (2020 – 2025)
- R03ES031724-01: Project Title: Quantifying Heavy Metals in Interstitial Fluid for Remote Monitoring of Chronic Exposures. Role: Co-PI, NIH/NIEHS, \$50,000/yr. (2020-2022)
- UNM College of Pharmacy, Team Science Level 3 Pilot Award. Single Cell RNA Sequencing of Lung Tissue Following Chronic Exposure to Mine Site-derived Metal Particulate Matter. Role: PI, UNM COP, \$20,000 1 year funding (2021).

#### **Completed Support**

- IRG-17-178-22: UNM Comprehensive Cancer Center American Cancer Society Institutional Research Grant. Tungsten and Breast Cancer: Impact of the Tumor Microenvironment, Role: PI, UNM CCC, \$30,000 1 year funding (2019 – 2020).
- UNM College of Pharmacy Pilot Award. Tungsten and Tumor Progression: Impact of the Tumor Microenvironment, Role: PI, UNM COP, \$10,000 (2018)
- NIH UNM Metals Superfund Center Grant, Project BP2: Mechanisms of Immune Dysregulation Produced by Uranium, Arsenic, and Metal Mixtures, Role: Key Personnel- Postdoctoral Fellow/ Research Faculty, UNM, (2017 – 2018)
- CIHR Operating Grant: Bone as a target for tungsten-induced toxicities, Role: Key Personnel- Postdoctoral Fellow, McGill University, (2015- 2017)
- CIHR Operating Grant: Bone as a target for tungsten-induced toxicities -Bridge Grant, Role: Key Personnel- Postdoctoral Fellow, McGill University (2014-2015)
- Cole Foundation, Postdoctoral Training Fellowship, Role: Trainee, 2 years, (2013-2015)
- MICRTP, Postdoctoral Training Fellowship, McGill University, Role: Trainee (2012)
- IGERT Fellowship Training Grant, Role: Trainee, University of Arizona (2011)
- NIEHS Gene by Environment Interaction Training Grant, Role: Trainee, University of Arizona, 2 years (2009-2010)
- NIEHS Toxicology and Toxicogenomics Training Grant, Role: Trainee, University of Arizona (2008)
- University of Arizona, Department of Pharmaceutical Sciences, Role: Trainee (2006-2007)