

Oscar R. Lujan

Education

- M.S.** Biology, Northern Arizona University 2019-Present
Advisor: Dr. Matthew Salanga
Thesis: Developmental Impacts of Arsenic and Uranium Contamination in a Zebrafish Model
NIH Research Initiative for Scientific Enhancement - 1R25GM127199-01
- B.S.** Biomedical Sciences, Northern Arizona University 2015-2019
- HSD** La Joya Community High School 2011-2015

Academic Work Experience

- 2015-2019 **Tissue Engineering and Regenerative Medicine Lab Scientist (TERM), Flagstaff, Arizona**
Through my time in the TERM laboratory, I focused my attention on how naturally occurring heavy metals impacted wound healing. More specifically, benchtop wound healing models such as the scratch assay, were used to assess how arsenic exposure affected human dermal fibroblast cells
- Summer 2018 **International Rice Research Institute Research Scientist (IRRI), Los Baños, Philippines**
While in the Philippines, extensive research was conducted on a variety of beneficial and damaging rice bacteria that lived within the rice microbiome. Research techniques involved the use of molecular biology and microbiology knowledge along with tools such as PCR, qPCR, Nanodrop quantification, and gel electrophoresis.
- Summer 2017 **Successful Transition and Academic Readiness Program Mentor (STAR), Flagstaff, Arizona**
As a mentor of 16 students who were either Pell Grant eligible or first-generation, my past successful college experiences were implemented. My responsibilities consisted of helping students balance the difficult social and academic realities that come with being a Freshman in college.
- 2019-Present **Latinx Student Union (LSU) Organization Graduate Advisor, Flagstaff, Arizona**

LSU is an all-inclusive Latin-based organization at Northern Arizona University that strives to create a community for all Latinx students. My role as an advisor is to ensure the organization continues to thrive in an appropriate and inclusive manner.

Scholarships & Fellowships

Fellowships:

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| 2019-Present | NIH Research Initiative for Scientific Enhancement | 1R25GM127199-01 |
| Summer 2018 | NIH Minority Health and Health Disparities International Training Program | T37MD008626 |
| 2017-2019 | NIH Undergraduate Research position | U54MD012388 |
| 2015-2017 | NIH Initiative for Maximizing Student Diversity | R25GM05693 |

Scholarships:

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| Fall 2020 | SACNAS Registration Scholarship |
| Fall 2019 | Northern Arizona University Graduate Travel Award |
| Spring 2018 | Northern Arizona University Senior Legacy Scholarship |
| 2015-2019 | Northern Arizona University Lumberjack Scholarship |

Publications

Pinto B., Cruz N., **Lujan O.**, Propper C., and Kellar R. Use of an *in vitro* assay to demonstrate the effects of arsenic on skin cell migration. *Journal of Visual Experiments*.

Pinto B., **Lujan O.**, Ramos S., Propper C., and Kellar R. 2018. Estrogen mitigates the negative effects of arsenic contamination in an *in vitro* wound model. *Applied In Vitro Toxicology*. 4(1): 24-29.

Technical Expertise

- Mammalian cell culture
 - Proficient in the maintenance, expansion, and freezing of human dermal fibroblast
 - Aseptic technique
- Quantitative Real Time Polymerase Chain Reaction (rt-qPCR)
 - Competent use of required machinery and techniques needed for rt-qPCR
- RNA Purification
 - Extraction of RNA from human skin cells.
- Fluorescence-based cell metabolic activity and viability assays
 - PrestoBlue and CyQUANT usage when evaluating environmental contaminants
- Gel electrophoresis
 - Ability to correctly set up electrophoresis device and parameters
 - Generation of agarose gel for DNA separation
- Scratch assay *in vitro* wound model

- Development and application of experiments using the wound healing model
- Organization of images taken in 24-hour time period
- Manual analysis of area closure within images
- Anesthetic of full thickness *in vivo* wound model
 - Safe administration of isoflurane anesthesia
 - Careful monitoring of heart rate and breathing of mice after anesthesia
 - Removal of hair on dorsal side of mice for surgeries
- Cellular proliferation assay
 - Consistent counting and images of human skin cells in consecutive days
 - Quantification and graph development from cell numbers
- Environmental contaminant exposure assay
 - Exposure of skin cell to relevant doses of environmental contaminants (arsenic) to mimic *in vivo* conditions
 - Creation of different arsenic concentrations in relation to applicable water conditions
- Image analysis software
 - Competent in the use of NIH ImageJ software
 - Ability to calculate the area of closure using collected images
- Statistical analysis
 - GraphPad PRISM
- Laboratory equipment maintenance
 - Upkeep of essential lab equipment such as -80° C freezer, water jacketed incubator, biosafety cabinet, etc.
- Zebrafish (*Danio rerio*) Husbandry
 - Maintenance and care of the Zebrafish organism in large quantities: feeding, safely euthanizing, and breeding
 - Upkeeping of Zebrafish colony aquatic environment: cleaning of tanks, instruments used for Zebrafish maintenance, and rotifer environment care

Presentations

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| November 2020 | Society of Environmental Toxicology and Chemistry, Online Conference Oral Presentation: “Developmental Impact of Arsenic Exposure in Zebrafish (<i>Danio rerio</i>)” |
| October 2020 | Society for Advancement of Chicanos/Hispanics and Native Americans in Science, Online Conference Oral Presentation: “Developmental Impact of Arsenic & Uranium Mixture Exposure in Zebrafish (<i>Danio rerio</i>)” |
| November 2019 | Society of Environmental Toxicology and Chemistry, Toronto, CA Poster Presentation: “Arsenic Contamination and its Impact on Cellular Functions in Wound Healing” |
| April 2019 | Northern Arizona University Undergraduate Symposium, Flagstaff, AZ |

- Poster Presentation: “Arsenic Contamination and its Impact on Cellular Functions in Wound Healing”
- April 2019 Northern Arizona University Student Water Symposium, Flagstaff, AZ
Poster Presentation: “Arsenic Contamination and its Impact on Cellular Functions in Wound Healing”
- September 2018 Northern Arizona Planetary Science Alliance Conference, Flagstaff AZ
Poster Presentation: “Evaluating Dose-dependent Effects of Arsenic on Cellular Proliferation and Migration”
- August 2018 Annual MHIRT Student Presentation, Flagstaff, AZ
PowerPoint presentation: “Rice Varieties in Relation to Bacterial Abundance and Defensive Genes”
- April 2018 Northern Arizona University Undergraduate Symposium, Flagstaff, AZ
Poster Presentation: “Evaluating Dose-dependent Effects of Arsenic on Cellular Proliferation and Migration”
- March 2018 Arizona Imaging and Microanalysis Society Conference, Flagstaff, AZ
2nd place winner; Poster Presentation: “Evaluating Dose-dependent Effects of Arsenic on Cellular Proliferation and Migration”
- April 2017 Northern Arizona University Undergraduate Symposium, Flagstaff, AZ
Poster Presentation: “In Vitro Evaluation of Arsenic Contaminated Skin Cells”
- March 2017 Arizona Bioindustry Association Conference, Phoenix, AZ
Poster presentation: “In Vitro Evaluation of Arsenic Contaminated Skin Cells”
- November 2016 Initiative for Maximizing Student Diversity Symposium, Flagstaff, AZ
PowerPoint presentation: “The Effects of Uranium and Arsenic on Wound Healing”