



**FOURTEENTH ANNUAL
STUDENT RESEARCH CONFERENCE**

TUESDAY, MARCH 3, 2020

Memorial Union

**ARIZONA STATE UNIVERSITY
TEMPE, ARIZONA**

Supported by a grant from the Louis Stokes Alliances for
Minority Participation (LSAMP) of the National Science Foundation (NSF)

**Fourteenth Annual
Arizona
Western Alliance to Expand Student Opportunities
(WAESO)
Student Research Conference**

March 3, 2020

Memorial Union, Arizona State University

Agenda

7:00 a.m.	Registration	La Paz Room 242
	Continental Breakfast	Ventana Room 241
9:00 a.m.	<u>For All Students:</u> Opening Remarks and Welcome	Ventana Room 241
	Dr. Jean M. Andino Director Western Alliance to Expand Student Opportunities; Faculty of Chemical Engineering Graduate Faculty Civil, Environmental, and Sustainable Engineering School for Engineering of Matter, Transport and Energy Ira A. Fulton Schools of Engineering Barrett Honors Faculty Senior Sustainability Scholar Arizona State University	
	Dr. Enrique R. Vivoni Associate Dean Graduate College Professor School of Sustainable Engineering and Built Environment Ira A. Fulton Schools of Engineering School of Earth and Space Exploration College of Liberal Arts & Sciences Arizona State University	

9:30 a.m. Student Research Conference Poster Presentations Ventana Room 241
All research poster presenters in all STEM disciplines at all levels will present their research at this time. All undergraduate student posters will be judged at this time.

**11:00 a.m. For All Undergraduate, Predoctoral, & Doctoral Students
Why You Should Consider Doctoral Education
& the Professoriate, Personal Testimonials, Part I** Ventana Room 241

Dr. Otakuye Conroy-Ben

Assistant Professor
School of Sustainable Engineering and the Built Environment
Ira A. Fulton Schools of Engineering
Affiliate Faculty
American Indian Studies
Arizona State University

Dr. Terry Alford

Associate Director
School for Engineering of Matter, Transport, and Energy
Professor
Materials Science and Engineering
Graduate Faculties
Mechanical Engineering and Chemical Engineering
Ira A. Fulton Schools of Engineering
Arizona State University
Graduate Faculty
Materials Engineering
African University of Science and Technology, Abuja, Nigeria
Senior Member
National Academy of Inventors

Dr. Ana L. Moore

Co-Director
Western Alliance to Expand Student Opportunities
Regents' Professor
School of Molecular Sciences/Center for Bioenergy & Photosynthesis
The College of Liberal Arts and Sciences
Distinguished Sustainability Scientist
Julie Ann Wrigley Global Institute of Sustainability
Arizona State University

12:00 p.m. Lunch Ventana Room 241

1:00 p.m.

For All Undergraduate, Predoctoral, & Doctoral Students
Why You Should Consider Doctoral Education
& the Professoriate, Personal Testimonials, Part II

Ventana Room 241

Dr. Gary F. Moore

Assistant Professor
School of Molecular Sciences
Center for Bioenergy and Photosynthesis
The College of Liberal Arts and Sciences
Center for Applied Structural Discovery
Biodesign Institute
Honors Faculty
Barrett Honors College
Julie Ann Wrigley Global Institute of Sustainability Scholar
Associate Editor
Photosynthesis Research
Arizona State University

Dr. Marcia Levitus

Associate Professor
Chemistry
School of Molecular Sciences
College of Liberal Arts & Sciences
Center for Single Molecule Biophysics
Biodesign Institute
Arizona State University

Dr. Daniel Rivera

Professor
Chemical Engineering
School for Engineering of Matter, Transport and Energy
Ira A. Fulton Schools of Engineering
Arizona State University

Dr. Albert L. McHenry

Co-Director
Western Alliance to Expand Student Opportunities
Vice President and Vice Provost Emeritus
Professor Emeritus
Electronics and Computer Engineering Technology
Arizona State University Polytechnic Campus
Research Professor
Hispanic Research Center
College of Liberal Arts & Sciences
Arizona State University (Tempe)

2:00 p.m. **Student Research Conference Poster Presentations** Ventana Room 241
All research poster presenters in all STEM disciplines at all levels will present their research at this time. Only WAESO predoctoral and doctoral research posters will be judged at this time.

3:00 p.m. **For All Undergraduate, Predoctoral, & Doctoral Students**
Why You Should Consider Doctoral Education
& the Professoriate, Personal Testimonials, Part III
Panel of WAESO Doctoral Graduates Ventana Room 241

Dr. Tammi Duncan
ASERT-IRACA Postdoctoral Fellow
Department of Pharmaceutical Sciences
University of New Mexico

Dr. Fredericka Brown
Associate Professor and Graduate Coordinator
Department of Mechanical Engineering
The University of Texas at Tyler

Dr. Emmanuel Morales Butler
Assistant Professor
Mathematics
Department of Natural Sciences
University of Puerto Rico, Utuado

Dr. Ariana Stickel
Postdoctoral Scholar
Department of Neurosciences
University of California San Diego

Dr. José Vega-Guzmán
Assistant Professor
Department of Mathematics
Lamar University

4:00 p.m. **For All Participants:**
All participants must submit
mandatory forms to certify participation
and permit reimbursement La Paz Room 241

Student Research Conference Undergraduate Student Research Poster Presenter List (By University and Major)

Arizona State University

Applied Biological Sciences

Monica K. Villa
*Availability of Antivenom in Urban/Rural
Hospitals and Veterinary Clinic*

Applied Mathematics for Life and Social Sciences

Leah J. Darwin
*Genetic Variability of the Fcγ Receptor in
the Population and its Role in Disease
Dynamics and Pathogenesis*

Biochemistry

Benjamín González
*Obstacle-Induced Branching in *Rhizopus
Oryzae**

Biological Sciences

Isaiah Bing
*Water Presence Along Riparian Washes in
Los Ojos, Sonora, Mexico*

D'Kiehl W. Cole-Cash
*The Evolution of Human Speech and
Communication*

Kaylee Delcid
*Measuring the Perch Height Selection of
Burrowing Owls in Anthropogenic
Landscapes of the West Valley*

Miguel A. Duarte
*Herbivory-Driven Impacts on Desert Plant
Photosynthesis Depend on Leaf Traits*

Cassandra Hernandez
*Phospholipase C epsilon 1 (PLCE1) Gene
Variants in the Population and They are
Association to Dengue Severity*

Danielle C. M. Pais
*Impact of Dietary Variation on the
Physiology and Health of Haemorrhous
Mexicanus*

Jasmine Patricio Palacios
*Arizona: Lakes, Ponds, and Canals
Potential Impacts of Chemical Exposures on
Aquatic Bird Species*

Rafael Rodríguez-García
*Correlation Between Animal Presence and
Water Presence in Washes in Sonora,
Mexico*

Lourdes M. Sánchez
*Sequence Similarities Between Zika and
Dengue Viruses and their Potential Role in
Antibody-Dependent Enhancement (ADE)*

Daniel Woodley
*Genetic Polymorphism of Bitter Taste
Perception in the Population and its
Association with Nutritional Status*

Biology

Manuel A. Álvarez
Understanding the Metabolic Response to Oxygen in a Respiro-fermenting Budding yeast, K. Lactis

Melissa González
Comparing SPMDs and Wristband Sampling Methods to Assess Local Water Quality in the Philippines

Chemical Engineering

Ervin J. Ramírez
Mechanism of NO_x Conversion Over Photocatalytic Cement

Brenda L. Villa
Carbon Dioxide Capture Using a Novel Fluidized Bed System

Chemistry

Madeline Alzamora
Quantification of Molecular Markers in Fog Samples

Conversation Biology and Ecology

Ivanna Caspeta
Vacant Niches in Successional Dynamics of Forest Communities

Karina Rentería
Impacts of Biological Invasions on Plant Diversity and Cultural Systems

Daniela Kenny
Water Presence After Storms in Semi-Arid Sonora, Mexico

Environmental Engineering

Andrea Russell
Development of Microbial Fuel Cells for the Production of Electrical Energy from Wastewater
Environmental Science

Guillermo J. Ortíz
Probing the Effects of Historic Midge Deposition on Lichen Photobiont Responses

Geography

Lila J. Rodríguez
The Lush Green Desert?

Global Health

Elizabeth Ardila
The Effect of Temperature on the Growth Rates of Amazonian Microbes

Mathematics

Benjamín Cabrera

Bitterness Perception in the Population and its Association with Genetic Polymorphism and Nutritional Status

Estrella Mountain Community College

Biology

Bre'anca Sanders
*Best Fit Primers for DNA Sexing Burrowing Owls (*Athene cunicularia*)*

Environmental Science

Tristan Pedroza
Identifying Learning Behavior in Rodents

Mechanical Engineering

Oscar Gutiérrez
Soccer Analytics
Robotics Engineering

Anastasia Martínez
Soccer Analytics Research

Phoenix College

Chemical Engineering

Roberto Martínez
*Colonization and Time-Dependent
Biodegradation of Microplastics by
Pseudomonas Aeruginosa*

Environmental Science

Francisco R. Ruelas García
*Analyzing and Identifying American Samoa
Microplastic Samples*

Medical Studies

Reynaldo R. Bujan Figueredo
*Colonization and Time-Dependant
Biodegradation of Microplastics by
Pseudomonas Stutzeri*

Princeton University

Electrical Engineering

Misael H. Campos
*Enhancing the Magnetic Domain Density in
Co/Pt Multilayer Thin Films of Various
Layer Repetitions*

Regis University

Biochemistry

Robert C. de Dios
*Reactions of Nitroxyl (HNO) with
Thiophenols*

Biology

Elijah M. Ahmad
*Role of Dipolar-Aprotic Solvents in the
Addition Reaction of Hydroxide Ion to
Aryldiazonium Tetrafluoroborate Salts*

Rhea Mae Peralta
*Oxidation of Mandelic Acid by
Permanganate: A Kinetic and Product Study*

Chemistry

Adrian A. Godoy
*Revisiting the Decomposition of
Trioxodinitrate (II): A novel Duality in
Nitroxyl (HNO) Redox Chemistry*

South Mountain Community College

Associate in Science, Chemistry

Islande Similien
*The Extract of Affect Genes and Replace
with a Healthy Gene*

Stony Brook University

Physics

David Díaz
Decoherence of Coupled Qubit Systems_

University of Arizona

Animal Science

Elina Landeros Rivas
Prevalence of Cyclospora Cayetanensis in Irrigation Water in the Southwestern Region of the US

Biomedical Engineering

Rafael Romero
LC-MS Measurement of Cortisol in Sweat Collected Using 3D Printed Customized Sweat Collection Devices

Chemistry

Alejandro Villalobos
Tackling Chemical Challenges of the 21st Century Through Exploration of Organometallic Complexes and New Reactivity Avenues with Transition Metal Complexes Stabilized by Carbocation-Based Ligand

Hydrology

Stephanie Serrano
Advancing Informal Environmental STEM Literacy & Learning: A Co-Created Citizen Science Rainwater Harvesting in Underserved Communities

Materials Science and Engineering

Luis F. Arciniaga
Osteoconductive Hybrid Scaffolds for Bone Tissue Regeneration Mechanical Engineering

Brendan S. Bogar
Astrogeology Image Analysis Toolkit Development

Molecular and Cellular Biology

María E. Macías
Reducing Oxidative Stress as a Mechanism Behind the Neuroprotective Effect of Phosphofructokinase in ALS

Nyssa M. Morgan
Analysis of Receptor-Like Kinase KIN7 in Lateral Root Growth and Filament Formation

Shaira F. Pérez
Determining the Prevalence of Norovirus in Wastewater Before and After Treatment

Molecular and Cellular
Biology/(pre)Neuroscience and Cognitive
Science

Angela R. Velázquez
The Effect of APOE Mutations in Mice on Weight

Molecular and Cellular
Biology/Biochemistry

Renata Vallecillo
Determining the Role of Brain-Type Creatine Kinase in Asthma

Neuroscience and Cognitive Science

Rudolph J. Rodríguez
The Emotional Stroop Task for Cancer Patients

Claudia Valenzuela
Neural Correlates of Visual Metaphor Processing: Introduction

Nutritional Sciences

Marleen Ibarra
Subcutaneous Adipose Tissue Therapy: a Deep Manual Therapy that Decreases Fat in Lipedema and Dercums Disease

Optical Sciences and Engineering

Craig Draper
Curved Holographic Waveguide Combiner for 1-D Pupil Expansion and Longitudinal Image Magnification

Physiology

Alicia Álvarez
Bone Viscoelasticity and Compression Screw Comparison

Adam C. Carl
Observational Study: Cooking Bread Over an Open Fire

Osagioduwa J. Igbinoba
How Nicotine Before and/or After Birth Alters the Structural and Functional Development of the Hypoglossal Motor Neuron

Joaquin E. López Rosales
Porcine Nonpigmented Ciliary Epithelium Releases ATP Through Interaction of TRPV4 and Hemichannels

Gabriela Orozco
The Role of Syndecan-1 in Pain Sensation in response to Hot and Cold Stimuli

Estevan C. Sandoval
Optimization of Protease Activated Receptor-2 Competitive Binding Assay

Hannah L. B. Veloz
The Effect of Syndecan-1 on the Regulation of Pain Sensation in Response to Various Stimuli

Physiology/Medical Sciences

Sadia L. Falana
Nitric Oxide Donors Attenuate Hemichannel-Mediated ATP release in Porcine Nonpigmented Ciliary Epithelium

Sara A. Sillik
Circadian Function in Retinal Pigment Epithelium

Psychological Sciences

Michelle A. López
Neural Correlates of Visual Metaphor Processing: Results

Psychology
Alexa A. García
Title: Neural Correlates of Visual Metaphor Processing: Design & Materials

Speech, Language and Hearing Sciences/Neuroscience

María S. Schoelen
Working Memory and Reading in School-Aged Children

Veterinary Science

Jazmine A. Jones
Multiple Interacting Gene Variants in a Family with Primary Lymphedema

University of Utah

Biology

Justin Kelleher

*Experimental Adaptation of Influenza A
Virus to Specific Host Genotypes
Biology (Anatomy and Physiology)*

Mayra C. Repetto

*Social Rank and Susceptibility to Viral
Pathogen*

Western New Mexico University

Molecular and Cellular Biology

Matias Murillo

*Transfection of CHO and HeLa Cells with
the Parkinson's Disease-Associated Gene
Encoding for Glial Cell-Derived
Neurotrophic Factor*

**Student Research Conference
Predoctoral Student
Research Poster Presenter
List (By University and Major)**

University of Arizona

Environmental Science

Anissa McKenna

*In Vitro Bioaccessibility of Arsenic in Mine
Tailings Related Minerals*

**Student Research Conference
Doctoral Student
Research Poster Presenter
List (By University and Major)**

Arizona State University

Chemistry

Jacob García
Photodissociation and Proton Migration of Ethanol Using Femtosecond Pump Probe Spectroscopy

Mathematics Education

Julia Judson-García
Investigating Students' Quantitative Reasoning in an Online PreCalculus Course

Kayla A. Lock
Investigating Students' Quantitative Reasoning in an Online PreCalculus Course

Mechanical Engineering

Emiliano J. Quiñones Yumbla
Anticipatory Muscle Responses in Transitions from Rigid to Compliant Surfaces: Towards Smart Ankle-Foot Prostheses

Microbiology

Bereket Estifanos
Roles of Coronavirus Viroporin Envelope E Protein in Virus Assembly

Molecular and Cellular Biology

Evelyn Luna
Mechanism of T Cell Mediated Hemorrhagic Disease During LCMV Infection

University of Arizona

Biomedical Engineering

Andrés Nuncio Zúñiga
Do You See Yourself in the 1%?

Molecular Medicine

Pierce Longmire
Recombinant NSMCE2 has Auto-SUMOylation and SUMO-Chain Assembly Activities

Soil and Water Science

Arthur Moses
Understanding the Microbial Makeup and Risks of Alternative Water Sources in Romaine Lettuce and Cilantro Crops

University of Connecticut

Materials Science and Engineering

Luis A. Ortíz
Ferroelectric Domain Switching in BFO/CFO Vertically Aligned Nanocomposites as a Function of Epitaxial Interface Proximity and Magnetic Poling

Alphabetical List of All Research Poster Presenters

Elijah M. Ahmad
Alicia Álvarez
Manuel A. Álvarez
Madeline Alzamora
Luis F. Arciniaga
Elizabeth Ardila
Isaiah Bing
Brendan S. Bogar
Reynaldo R. Bujan Figueredo
Benjamín Cabrera
Misael H. Campos
Adam C. Carl
Ivanna Caspeta
D'Kiehl W. Cole-Cash
Leah J. Darwin
Robert C. de Dios
Kaylee Delcid
David Díaz
Craig Draper
Miguel A. Duarte
Bereket Estifanos
Sadia L. Falana
Alexa A. García
Jacob García
Adrian A. Godoy
Benjamín González
Melissa González
Oscar Gutiérrez
Cassandra Hernández
Marleen Ibarra
Osagioduwa J. Igbinoba
Jazmine A. Jones
Julia Judson-García
Justin Kelleher
Daniela Kenny
Elina Landeros Rivas
Kayla A. Lock
Pierce Longmire
Michelle A. López
Joaquin E. López Rosales
Evelyn Luna
María E. Macías
Anastasia Martínez
Roberto Martínez
Anissa McKenna
Nyssa M. Morgan
Arthur Moses
Matias Murillo
Andrés Nuncio Zúñiga
Gabriela Orozco
Guillermo J. Ortíz
Luis A. Ortíz
Danielle C. M. Pais
Jasmine Patricio Palacios
Tristan Pedroza
Rhea Mae Peralta
Shaira F. Pérez
Emiliano J. Quiñones Yumbla
Ervin J. Ramírez
Karina Rentería
Mayra C. Repetto
Lila J. Rodríguez
Rudolph J. Rodríguez
Rafael Rodríguez-García
Rafael Romero
Francisco R. Ruelas García
Andrea Russell
Lourdes M. Sánchez
Bre'anca Sanders
Estevan C. Sandoval
María S. Schoelen
Stephanie Serrano
Sara A. Sillik
Islande Similien
Claudia Valenzuela
Renata Vallecillo
Angela R. Velázquez
Hannah L. B. Veloz
Brenda L. Villa
Monica K. Villa
Alejandro Villalobos
Daniel Woodley