

# **CO-WY AMP Commentary**

### **WINTER 2017**

#### **CO-AMP BECOMES CO-W/Y AMP**

On October 1, 2016, CO-AMP was awarded \$4.8 million from the National Science Foundation to expand the consortium to sixteen institutions of higher education, including two new partners in Wyoming, becoming the Colorado-Wyoming Alliance for Minority Participation (CO-WY AMP)! "Even though the grant resides at Colorado State University, it is truly a Colorado-Wyoming alliance," said Ernie Chavez, a professor of psychology in the Colege of Natural Sciences and director of the CO-WY AMP program. In particular, he said, "part of the hope in including Wyoming is to increase our outreach to American Indian students to the two major reservations there." And he is excited to bring a wealth of opportunities to all underrepresented students interested in Science, Technology, Engineering, and Mathematics (STEM) in the two states.

For the first year of the expanded program, one of the key focuses will be on undergraduate research. This experience is considered a "high-impact practice" that increases students' likelihood of finishing their degrees. "The evidence is very clear that the earlier students get involved in research – especially in the sciences – the higher the probability that they will remain in their major and will graduate in their major," Chavez said.

For many students, however, devoting extra time outside of class to lab research isn't economically feasible. To combat that challenge, part of the grant will go to enlarging regional participation in Research Experiences for Undergraduates, an NSF-run program. In this program, undergraduates can apply to spend 10 weeks at a lab at one of the consortium institutions, where they will receive free lodging, as well as a stipend. "Underrepresented students are more likely to be first-generation [college students]," Chavez said. "And first generation students are more likely to have to work during the summer. This is a livable wage that would allow them to focus on research for that summer."

The other central goal of this first year of funding will be to help bolster underrepresented STEM student participation in international programs, another well-documented high-impact practice that improves the likelihood of graduation. Travel also can broaden the idea of what a STEM degree can do. "From my perspective," Chavez said, "underrepresented students who leave the sciences often can't see a direct relationship between their community and what they're doing [in school]." International opportunities, such as Engineers without Borders (EWB), can help remedy that disconnect. Through EWB, students travel to a community outside of the country to facilitate the development of clean water systems or other infrastructure that might be needed, putting their engineering skills to work. Part of this NSF grant will go toward making these programs accessible to more students by paying for their travel.

CO-WY AMP site coordinators and staff members are also excited to continue building this unique alliance for students who persist from high school (directly or through community colleges) to undergraduate degree completion, thereby increasing the number of underrepresented students prepared to succeed at the graduate level and contribute to a global, technologicallydriven workforce.

Segments of this article originally published at: <u>http://source.colostate.edu/alliance-crosses-state-lines-expand-opportunities-students-stem/</u>

#### **CO-WY AMP LEADERSHIP**





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CO-WY AMP is funded through the NSF Louis Stokes Alliance for Minority Participation (HRD 1619673). Page 2

# **CO-W/Y AMP COMMENTARY**



### **BRIDGE TO THE DOCTORATE 2016–2018**

### **BD6 at Colorado State University**

On August 1, 2016 Colorado State University (CSU) was awarded funding from the National Science Foundation to support The Louis Stokes Alliance for Minority Participation Bridge to the Doctorate (LSAMP BD) Fellowship program. The award supports 12 graduate students from underrepresented minority backgrounds who are pursuing studies in STEM disciplines. BD Fellows receive intensive mentoring and academic support to assist them with the successful completion of their graduate studies. Other initiatives will provide conference presentation experience, leadership opportunities, and extensive advising and mentoring with faculty and peer advisors. CSU was first awarded the fellowships in 2006 in partnership with the Colorado Alliance for Minority Participation (CO-AMP). To date, three cohorts of Fellows have completed the Bridge to the Doctorate at CSU (two from other partner institutions). Dr. Greg Florant (right), professor of biology, serves as the director of the Graduate Center for Diversity and Access and director of the LSAMP BD Program.



Dr. Greg Florant BD Program Director Professor, Biology Director, Graduate Center for Diversity and Access Colorado State University





2016 NSF Bridge to the Doctorate Program Fellows



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### **BRIDGE TO THE DOCTORATE STUDENTS 2016–2018**



Diane Aceveda BS, Chemistry San Diego State University <u>Current Program:</u> PhD, Chemistry <u>Area of Interest:</u> Chemical biology



Ashley Budde BS, Animal Sciences California State University <u>Current Program:</u> MS, Animal Sciences <u>Area of Interest:</u> Ruminant nutrition, specializing in feedlot cattle nutrition



Matthew Cackovic BS, Chemical and Biological Engineering Colorado State University <u>Current Program:</u> PhD, Chemical Engineering Area of Interest: Chem and Bio Engineering – Wettability and Adhesion on surfaces



Jasmin Hicks BS, Biology Bridgewater State University <u>Current Program:</u> PhD, Molecular, Cellular & Integrative Neurosciences <u>Area of Interest:</u> Neuronal communication



Arielle Howell BS, Zoology Colorado State University <u>Current Program:</u> MS, Zoology <u>Area of Interest:</u> Feline muscle metabolism



Eric Lopez BS, Chemistry San Diego State University <u>Current Program:</u> PhD, Chemistry <u>Area of Interest:</u> Nanoscopic Chemical Detection



Jonathan Martinez BS, Meteorology Florida State University <u>Current Program:</u> PhD, Atmospheric Science <u>Area of Interest:</u> Tropical Cyclones



Dominique Montano BS, Zoology Colorado State University <u>Current Program:</u> MS, Zoology <u>Area of Interest:</u> Comparative and Exercise Physiology in Large Mammals



Gerardo Narez BS, Bioengineering UC San Diego <u>Current Program:</u> PhD, Bioengineering <u>Area of Interest:</u> Soft Tissue Mechanics



Marina D. Rodriguez BS, Fish, Wildlife & Conservation Biology Colorado State University <u>Current Program:</u> MS, Fish, Wildlife, & Conservation Biology <u>Area of Interest:</u> Telomere dynamics & disease in avian species at high elevation



Sydney Turner BS, Civil and Environmental Engineering University of Virginia <u>Current Program:</u> MS, Civil Engineering <u>Area of Interest:</u> Water and international development



Robert Williams BA, Biology University of North Carolina <u>Current Program:</u> PhD, Biochemistry <u>Area of Interest:</u> Biochemistry & Molecular Biology - Epigenetics, Chromatin Biology & Gene Expression

Photos provided by Dr. Greg Florant / Colorado State University

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Trinidad State

UNIOR COLLEGE

### **CO-WY AMP STUDENT NEWS**

#### **ROBOTICS CHALLENGE**

CO-AMP students at Trinidad State Junior College worked to design, cre-

ate and build a robot entry for the 2015 Colorado Space Grant Consortium's Robotics Challenge. The Challenge is a battle of planning, skills, and execution for students across the state versus the unyielding elements of Great Sand Dunes National Park in a series of obstacle courses. The competition included almost every four-year school in Colorado—32 teams in all. The TSJC Robotics Team created an autonomous robot named BEK-E (Beacon Electronic Kinect Explorer) that is equipped with eleven sophisticated visual sensors to observe and avoid obstacles. The team goals



include creating a system that functions with more sensors than previous years, improving upon previous errors, and utilizing new technologies in design and development. TSJC's robotics team presented at the Colorado Space Grant Consortium's research symposium to judges in the aerospace/robotics industry.

Trinidad State Junior College's (TSJC) robot, BEK.E., was named top robot for two years in a row in the 1.5 kilogram and over category at the 2015 Colorado Space Grant Consortium's Robotics Challenge.

Photo courtesy of Trinidad State Junior College

#### **BD FELLOW—ASHLEY BOURKE**

Bridge to the Doctorate Fellow Ashley Bourke (Ojibwe-First Nations) participated in the Indigenous Knowledge Series at University of Colorado Denver. Her presentation was part of the American Indian Research Day, which exposes American Indian students that attend schools in Colorado to think about and explore research careers in Indian Country. Ms. Bourke also received a fellowship from the National Science Foundation's Graduate Research Fellowship Program and was the Co-Founder of Women in STEM at CU Denver.





Photo courtesy of University of Colorado Denver

#### **BIOLOGY AND GEOLOGY STUDENTS VISIT PICKETWIRE CANYONLANDS**

CO-AMP supported thirteen Otero Junior College Biology and Geology students to visit Dinosaur Tracks located at Picket Wire Canyonlands on the Comanche National Grasslands. These primitive canyons are home to the largest known set of dinosaur tracks in North America, Native American rock art, and early Hispanic settlements. Students interacted with Bruce Schumacher, US Forest Ser-

vice Zone Paleontologist; Steve Keefer, Colorado Parks and Wildlife District Manager; Jim Herrell, US Forest Service Volunteer; and Lynn Neve, US Forest Service employee. Students

were able to visit excavation sites, learn the index fossils in the region, and discuss excavation processes (including paleontological processes) leading to animal identification. Additionally, CO-AMP students were able to talk with these professionals regarding their career paths.







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### **CO-WY AMP STUDENT NEWS (continued)**

#### MARS ONE 2018 LANDER UNIVERSITY COMPETITION

At Metropolitan State University of Denver (MSU Denver), the aerospace and engineering organization, Students for the Exploration and Development of Space (SEDS), submitted a proposal to the Mars One 2018 Lander University Competition. The proposed payload, Insitu Habitat Improvement through Soil Strengthening (IHISS), undertook an exciting oppor-



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tunity to determine the composition of the soil on Mars and binding agents that improve habitat protection for future Mars One settlers. The MSU Denver SEDS team recruited additional project members from the University of Col-



orado Denver and Community College of Denver, and brought on board several faculty advisors with decades of experience in the aerospace industry. MSU Denver students were one of 10 finalist-groups worldwide.

#### ARROW DIVERSITY DAY 2016



In 2016, students from the University of Denver, University of Colorado Boulder, Colorado State University, and Metropolitan State University of Denver attended Arrow Diversity Day, held at Arrow Electronics headquartered in Centennial, Colorado. Arrow Electronics is an American Fortune 500 company that specializes in distribution and value added services relating to electronic components and computer products. The day consisted of a panel of Arrow executives, a student panel with each school represented, and then rotations with various Arrow employees from departments currently hiring for full-time and intern positions. Students networked with Arrow executives and employees, as well as with other students. Students also participated in professional development; coaching and networking workshops; resume development, reviewing and critiquing; and interview and networking skills.

#### **MINORITY ACCESS**

Colorado State University's commitment to diversity was recognized as a role model by Minority Access Inc. at the 16th National Role Models Conference in Baltimore, Maryland. Minority Access is dedicated to improving the recruitment, retention and enhancement of minorities on campuses and in the workplace. This is the second recognition for CSU from Minority Access, which also cited the university's diversity efforts in 2009, including added administrative positions that champion diversity; Key Communities (developed by CO-AMP), and a living learning program that are interviewed accessed and administration of the second recognition.

assists students from historically underrepresented populations through their first two years at CSU.



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### **CO-WY AMP STUDENT NEWS: SACNAS**

# SACNAS

"Advancing Hispanics/Chicanos & Native Americans in Science"

#### SACNAS AT ADAMS STATE UNIVERSITY

CO-WY AMP site coordinator and professor of chemistry Dr. Renee Beeton and Dr. Kristy Duran assistant professor of biology, co-founded the SACNAS chapter at Adams State University. Drs. Beeton and Duran have traveled with students to National SACNAS Conferences. Several CO-AMP students have been selected to present their research.





Photo provided by Renee Beeton / Adams State University

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#### 2016 AMERICAN MEMBRANE TECHNOLOGY ASSOCIATION CONFERENCE

Undergraduate student Nohemi Almaraz, a senior in Civil Engineering at Colorado School of Mines, attended the 2016 American Membrane Technology Association conference in San Antonio, Texas. This is the third CO-AMP sponsored, professional conference Almaraz attended while participating in undergraduate research at CSM. Conference attendance provided her the opportunity to gain confidence in presenting to professionals in her field of research and provided the opportunity to enhance her resume for graduate school applications. Almaraz co-authored several articles in the Journal of Membrane Science.



ume for graduate school applications. Almaraz co-authored several articles in the Journal of Membrane Science.

#### **BRIDGES TO THE BACCALAUREATE**

CO-AMP served as the conduit to place students into Bridges to the Baccalaureate (B2B) programs that remove barriers for students transferring to Colorado State University (CSU) by providing support for their STEM studies. Eight community college students from nearby Front Range Community College spent ten weeks gaining valuable research experience in CSU laboratories (plant biology, chemistry, biochemistry). After being placed into a CSU faculty member's lab, the students learned how to conduct research and worked on assigned projects relevant to their fields of study. Although these programs all have a different emphasis depending on the students' interests, all in-

cluded a final project. Of the eight students, five transferred to CSU in fall 2016.







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### INTERNATIONAL CONNECTIONS: CO-WY AMP AND ENGINEERS WITHOUT BORDERS

#### LA CRIBA, EL SALVADOR

The Colorado State University chapter of Engineers without Borders (EWB under the direction of faculty advisor Dr. Christopher Bareither), supported CO-AMP student Daniela Gonzalez to participate in an international experience in La Criba, El Salvador. The overall goal of this project was to improve the quantity and quality of potable water for a rural community of approximately 700 residents. All elements of the project were led by student members of



EWB-CSU. The project included documenting hydraulic design of the well, building a transmission line and new water storage tank, addressing non-technical constraints, and identifying aspects of sustainability that are instrumental to project success.

EWB-CSU members Ana Hoyt (left) and Daniela Gonzalez (right) work on putting together a solar panel to power the radio transmitter at the tank house.

Photo courtesy of Priscilla Mercedes Vazquez

# Fort Lewis

#### EWB AT FORT LEWIS COLLEGE

In 2004, Fort Lewis College (FLC) became one of the first chapters of Engineers Without Borders (EWB) in the country. Started at a CO-WY AMP partner institution (University of Colorado Boulder) just a few years earlier, the nonprofit organization creates "community-driven development programs." designing and implem



zation creates "community-driven development programs," designing and implementing sustainable engineering projects in developing countries all around the world.

Professor of Engineering and Director of FLC's EWB, Dr. Don May, brought his first group of seven engineering students to Huai Houk, Thailand, in 2005. Since then, he has teamed dozens of FLC students from

a wide range of majors with faculty and community partners to build water and sanitation systems in remote villages throughout Thailand, Laos, Ecuador, Nicaragua, and Myanmar, improving the day-to-day lives of thousands of people.

Over the decade that FLC's EWB (student organization called the Village Aid Project) has existed, the program has constructed more than two dozen water and sanitation systems in villages that have never known what it is like to have ready access to clean water. The program has also changed and inspired students who went along to help.

> Pictured at right, Fort Lewis student Mikayla Sanchez works with a helper in the village of Rio Arriba in remote northern Nicaragua.



Photo provided by Don May / Fort Lewis College

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# **CO-W/Y AMP COMMENTARY**



### **CO-AMP SPRING MEETING**

### National Renewable Energy Laborator (NREL) Golden, CO

In 2015, the National Renewable Energy Laboratory (NREL) in Golden hosted the Colorado Alliance for Minority Participation (CO-AMP) Spring Meeting, bringing site coordinators from fourteen Colorado colleges and universities together to discuss opportunities for minority students pursuing careers in STEM fields.



Representatives from the fourteen Alliances made connections and learned about different CO-AMP programs, like internships. The event included opening remarks from CO-AMP Program Director Ernie Chavez, an industry panel featuring Boeing, Lockheed Martin, and NREL that highlighted internship opportunities, and some words on NREL's research workforce from Deputy Lab Director Dana Christensen.

The meeting, which highlighted CO-AMP activities that target underrepresented students who pursue a STEM future, was a way for site coordinators "to find out information, take ideas back to their college or university, and talk to their students about it," said Dr. Beverly Marquart, program manager with CO-AMP. "One of the things we've been working on is student science identity." As Marguart explained, "Encouraging science identity helps students feel like



Meeting attendees tour NREL facilities.

scientists, be a part of the science community, and be more engaged and confident in what they do at school. One of the pieces of a science identity we wanted to present is how students can be involved in internships and professional organizations."



Dr. Chavez presents CO-AMP data and activities.



Industry partners from Boeing, Lockheed Martin, and NREL discussed internship opportunities.



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### CO-WY AMP PARTNERS: Serving Colorado and Wyoming



# Page 10 CO-WY AMP COMMENTARY



### **CO-WY AMP SITE COORDINATORS**



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### **CO-WY AMP ADVISORY BOARD**



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# **Colorado School of**

## **CO-W/Y AMP INDUSTRY PARTNERS**



## Announcements



# Note from the Principal Investigator:

Dear CO-WY AMP Colleagues and Friends,

On October 1, 2016 CO-AMP began its next five-year phase of National Science Foundation funding with the addition of Wyoming, changing its name to CO-WY AMP! Sixteen institutions of higher education are now part of the framework that comprise the Colorado-Wyoming Louis Stokes Alliance for Minority Participation network. We are very pleased to welcome the University of Wyoming and Central Wyoming College to the CO-WY AMP alliance!

Our goal is to continue to protect and assure the institutionalization of educational programing for minorities in STEM fields by integrating underrepresented students into a campus community through bridge programs, early research projects, and international field experiences, all while increasing communication of effective programming across our partner institutions.

It is with great pleasure that we share our Winter Newsletter, *CO-WY AMP Commentary*, which highlights some of our accomplishments and the impact that has been felt, not only within the region, but also nationally and internationally. Alt-



Dr. Rick Miranda Principal Investigator of CO-WY AMP and CSU Provost/Executive Vice-President

hough it is impossible to feature every success, it is our hope that this publication will serve as a resource, as well as a tribute, to our dedicated individuals who through commitment and tireless effort sustain their passion for students by increasing the number of activities and growing the number of participants involved in the program.

Dr. Ríck Míranda