CSU NSF REU and IRES Programs and Awardees

Moderated by:
Dr. Frank A. Gomez
Executive Director, STEM-NET
Office of the Chancellor

https://www2.calstate.edu/impact-of-the-csu/research/stem-net
Speakers

**Melissa Olson, Herman Sintim, & Sally E. O’Connor, NSF**
The National Science Foundation Research Experiences for Undergraduates Site Program

**Mehran Mazari, Cal State LA**
Collaborative REU Proposals: Challenges and Opportunities

**Betsy Read, CSU San Marcos**
Reflections on CSUSM’s REU Site: NGS from Beetles to Beer

**Zair Ibragimov, Cal State Fullerton**
Engaging Students in Research Internationally

**Paul Laris, Cal State Long Beach**
In it for the Long Run: Developing an REU-Site with a Private Landowner

**Corey Garza, CSU Monterey Bay**
Monterey Bay Regional Ocean Science REU
REU Sites Program Overview

Solicitation: NSF 19-582  **Watch for potential updates in next REU cycle**

Goal:

Attracting students to, and retaining them, in science and engineering and for preparing them for careers in these fields.

How:

• The REU program, through both Sites and Supplements, aims to provide appropriate and valuable educational experiences for undergraduate students through participation in research

• REU projects feature high-quality interaction of students with faculty and/or other research mentors and access to appropriate facilities and professional development opportunities.
REU Sites Program Overview

Basic Elements of REU Sites

• Must have a well-defined common focus that enables a cohort experience for students
  • May be based in a single discipline or academic department, or may offer inter- or multi-department research opportunities under a coherent intellectual theme
• Should reflect the unique combination of the proposing organization’s interests and capabilities and those of any partnering organizations
• Should involve students in research who might not otherwise have the opportunity
• Should provide high-quality research environment, mentoring and professional development opportunities

Directorate and Division specific norms exist – talk to the cognizant Program Officer
REU Solicitation - Eligibility

Special PI and Student Eligibility Requirements:

- Only 1 PI and 1 Co-PI Allowed
  - 1 month summer salary support for ALL program management
- Undergraduate student who is enrolled in a degree program leading to a baccalaureate or associate degree.
- Undergraduate student participants supported with NSF funds in either REU Supplements or REU Sites must be U.S. citizens, U.S. nationals, or permanent residents of the United States
- For REU Sites, a significant fraction of the student participants should come from outside the host institution or organization

There are no restrictions or limits on the number of proposals per organization

Melissa Olson, Sally O'Connor, Herman Sintim     National Science Foundation
REU Solicitation – Project Description

Student Selection & Recruitment:

• Institutions where students will be recruited from
• Recruitment efforts to attract underrepresented groups
• Majority of students must be recruited from institutions with limited STEM research opportunities
• Significant fraction of students should come from outside institution
• Include quantifiable goals and describe how you will meet them

Student and Mentor Professional Development:

• Plans for student professional development, including responsible and ethical research conduct
• Training, mentoring or monitoring for research mentors
• REU Site's plans for communicating information on expectations of behavior to ensure a safe and respectful environment for all participants
REU Solicitation – Project Description

Nature of Student Activities:

- Detailed descriptions of example projects including
  - Significance
  - Framework
  - Hypothesis
  - Research Questions
- Plan that ensures student-faculty interaction and student-student communication
- Describe students’ role in projects and desired student outcomes

Research Environment:

- Experience and record of PI and mentors in undergraduate research
- Sustained mentoring plans
REU Solicitation – Project Description

Project Evaluation and Reporting:

• Plan to measure qualitatively and quantitatively the success of the project
• Structured means to track students beyond graduation
• Site can engage educational research specialist, but paid “external evaluator” is not a required
• Approach assessment like a scientist

Student and Mentor Professional Development:

• Plans for student professional development, including responsible and ethical research conduct
• Training, mentoring or monitoring for research mentors
• REU Site's plans for communicating information on expectations of behavior to ensure a safe and respectful environment for all participants
Typical CHE Site:

- Between 8 and 12 students/summer (10 is typical)
- Onsite 10-week experience
- ~80% of participants are external
- Typically, 3-year awards
- Different REU Site models and themes are encouraged!
  - International Sites
  - Distributed Sites or Faculty Partnerships
  - Sites that engage students with disabilities
  - Community college engagement
  - Virtual sites
### REU Sites Program in the Division of Chemistry

Publications Acknowledging CHE REU Site Awards by Subject

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What makes a BIO-focused REU Site Proposal Competitive?

• Overarching theme that resonates throughout the proposal

• Know the norm (not necessary to follow but make sure to justify if drastically outside the norm)

• Typical program: 10-weeks; 10 students; summer

• Funds predominantly go toward student costs, etc. (https://www.nsf.gov/funding/pgm_summ.jsp?pims_id=505690)

• Main focus: research but recruitment and programming critical

• Ask: what is unique/special about your proposal or Site?
SYNOPSIS

The Directorate for Biological Sciences (BIO) participates in the NSF-wide REU program. The Division for Biological Infrastructure (DBI) manages the REU Site program for BIO.

The NSF-wide Research Experiences for Undergraduates (REU) solicitation governs the overall competition. The following clarifications/explanations are specifically for REU Site proposals submitted to the BIO/DBI.

- A BIO-funded REU Site hosts on average 10 students for a summer program lasting approximately 10 weeks long.
- In BIO, at least 50% of participants must come from outside the host institution.
- Stipend, meal allowance and travel to and from the REU site must be budgeted. A small research allowance of $1,000-2,000 per student can be added to Participant Support costs.
- Travel to conferences to present student research should NOT be included in the budget. Travel funds to students are provided through a Travel Award system administered in the https://bioreu.org website.
- Over the past several years, Site awards to institutions have the predominant costs under the Participant Support Costs (PSC); typically, PSC constitute 90% or more of the Total Direct Costs.
- Most awards provide 3 years of funding. Proposers wanting to request more than 3 years of support should contact the Program Directors.
- Assessment of BIO-funded REU Sites is done using the Student Assessment of Their Learning Gains Undergraduate Research Student Self-Assessment (SALG URSSA) tool (see the https://bioreu.org website for details).
<table>
<thead>
<tr>
<th>Site Information</th>
<th>Site Location</th>
<th>Contact Information</th>
<th>Additional Information</th>
</tr>
</thead>
<tbody>
<tr>
<td>Alabama State University</td>
<td>Montgomery,</td>
<td>Primary: Komal Vig (334)</td>
<td>Research Topics/Keywords: Biology, Biosciences, Biomedical Engineering, Chemistry, Physics</td>
</tr>
<tr>
<td>REU Site: Research &amp; Training in Multidisciplinary field of Regenerative Sciences for Undergraduates Biological Sciences</td>
<td>Alabama</td>
<td>604-8189 <a href="mailto:komalvig@alasu.edu">komalvig@alasu.edu</a></td>
<td>Abstract of Award</td>
</tr>
<tr>
<td>American Museum of Natural History</td>
<td>New York, New</td>
<td>Primary: Cheryl Hayashi (212)</td>
<td>Research Topics/Keywords: Biosciences, phylogeny,</td>
</tr>
<tr>
<td>REU SITE: Systematics, Evolution and Conservation for the 21st Century</td>
<td>York</td>
<td>769-5073 <a href="mailto:chayashi@amnh.org">chayashi@amnh.org</a></td>
<td>systematics, evolution, conservation, paleontology,</td>
</tr>
<tr>
<td></td>
<td></td>
<td>Secondary: John Flynn (212)</td>
<td>neontology, museum, invertebrate, vertibrate, genomics,</td>
</tr>
<tr>
<td></td>
<td></td>
<td>769-5806 <a href="mailto:dean-riggs@amnh.org">dean-riggs@amnh.org</a></td>
<td>morphology,</td>
</tr>
<tr>
<td></td>
<td></td>
<td>Comments: Additional contact</td>
<td>Comments: Additional contact: Maria Rios</td>
</tr>
<tr>
<td></td>
<td></td>
<td>(212) 769-5806</td>
<td><a href="mailto:mrios@amnh.org">mrios@amnh.org</a></td>
</tr>
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<td>Abstract of Award</td>
<td>Abstract of Award</td>
</tr>
<tr>
<td>Auburn University</td>
<td>Auburn, Alabama</td>
<td>Primary: Alan Wilson (334)</td>
<td>Research Topics/Keywords: biology, biosciences, ecology,</td>
</tr>
<tr>
<td>REU Site: Warm-water aquatic ecology</td>
<td></td>
<td>246-1120 <a href="mailto:wilson@auburn.edu">wilson@auburn.edu</a></td>
<td>limnology, fisheries management, evolution, molecular</td>
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<tr>
<td>Fisheries, Aquaculture, and Aquatic Sciences</td>
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<td>biology, microbiology, invasive species, behavior,</td>
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<td></td>
<td></td>
<td></td>
<td>statistics, restoration, modeling, hydrology, remote</td>
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<td></td>
<td></td>
<td></td>
<td>sensing,</td>
</tr>
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<td>Abstract of Award</td>
<td></td>
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<tr>
<td>Boise State University</td>
<td>Boise, Idaho</td>
<td>Primary: Jim Belthoff (208)</td>
<td>Research Topics/Keywords: Biosciences, ecology, behavior,</td>
</tr>
<tr>
<td>REU Site: Raptor Research</td>
<td></td>
<td>426-4033 <a href="mailto:jbeltho@boisestate.edu">jbeltho@boisestate.edu</a></td>
<td>population biology, community ecology, wildlife management,</td>
</tr>
<tr>
<td>Raptor Research Center</td>
<td></td>
<td></td>
<td>anthropogenic impacts, parasitology,</td>
</tr>
<tr>
<td></td>
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<td></td>
<td></td>
</tr>
</tbody>
</table>
Questions & Answers

Contact Information:

Name: Melissa Olson, Sally O’Connor, Herman Sintim
Campus/Department: National Science Foundation
Website: www.nsf.gov
Email: molson@nsf.gov, soconnor@nsf.gov, hsintim@nsf.gov
Collaborative REU Proposals: Challenges and Opportunities

Mehran Mazari – Cal State LA

Cal State LA Collaborators:
Tonatiuh Rodriguez-Nikl
Jingjing Li
Mohammad Pourhomayoun

Mehran Mazari, Associate Professor
Cal State LA, Department of Civil Engineering
mmazari2@calstatela.edu
Project Overview

NSF Award # 1950492

REU Site: Collaborative Proposal: Research Experience for Undergraduates in Underground Infrastructure


NSF Organization: EEC - Division Of Engineering Education and Centers

NSF Program: EWFD - Engineering Workforce Development

Multi-site award to Colorado School of Mines, Lehigh University, and California State University, Los Angeles
REU Program Objectives

• **Attract, engage, and educate** undergraduate students from institutions that have limited research activities in underground construction and engineering research;

• Offer **hands-on high-quality research experience** in state-of-the-art laboratory and computing facilities in combination with a series of **professional development** activities; and

• Motivate undergraduate students to pursue and prepare themselves to succeed in advanced degrees in **STEM**, with an emphasis on women and minorities.
Our Story

It all started back in 2017… out of an idea from another collaborative multi-campus research center.

How it started (2017) | How it’s going (2021)
---|---
The Engineering Education and Centers (EEC) program staff recognize the effort that went into this submission. However, I regret to inform you that the National Science Foundation is unable to support your proposal.

… and 2018

… and 2019

Mehran Mazari  
Cal State LA / Civil Engineering  
mmazari2@calstatela.edu
Collaborative Proposal

In our REU program, three campuses were involved:

- All team members from different campuses work on ONE collaborative proposal
  - Multi-site recruitment
  - 4 students per site
  - Geographically distributed campus locations
- Each campus submit the proposal indecently on FastLane but with their own PI(s) and senior personnel
- Plan for collaborative activities, workshops and events
  - In-person events (originally planned)
  - Online and hybrid events (modified later)
REU Site Challenges

- Advertising and Recruitment process
- Planning and Coordinating REU Summer Activities
  - Professional Development Workshops
    - Communication skills
    - Presentation practices and technical writing
    - Academic advancement
  - Group Research Exchange Sessions
- Implementation and Student Engagement
  - Virtual vs In-Person
  - Faculty Mentors (4 per each site)
  - Assessment and Evaluations

Mehran Mazari  Cal State LA / Civil Engineering  mmazari2@calstatela.edu
Summary and Highlights

• Leveraging campus educational and research resources
• Innovative and multidisciplinary research topics
• Engaging and encouraging other faculty to get involved in mentoring REU cohorts
• Recruiting students from diverse backgrounds
• Collaborative and multi-campus REU proposals
• Getting involved with other current REU sites
Collaboration Opportunities

• Multi-Campus Research Collaborations
  • NSF, USDOT, DOE, etc.

• Multidisciplinary research collaboration opportunities:
  • Infrastructure Resilience and Sustainability
  • Application of Data Visualization, Big Data Analytics and Machine Learning
  • Innovative and Sustainable Infrastructure Materials

• Collaborative workshops, training and certificate programs

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mmazari2@calstatela.edu

Let’s connect:
@MehranMazari
Mehran Mazari
Mehran Mazari
Reflections on CSUSM’s REU Site: NGS from Beetles to Beer

Betsy Read – Cal State University, San Marcos

Betsy Read, Professor
Cal State University, San Marcos, Biological Sciences
bread@csusm.edu
CSUSM’s REU Site: NGS From Beetles to Beer

- 10-week program
- 10 participants
- Enrichment Activities
  - Field Trip to USCD
  - NSPIRE Lecture Series
  - 3 Research Seminars
  - MentorFest
  - Career Panel
  - Poster Workshop
  - Bioinformatics/Manuscript Writing Workshop
  - Poster Showcase

Reflections on CSUSM’s REU Site: NGS from Beetles to Beer
Highlights from 2021 included writing and submitting a Genome Announcement to G3

Reflections on CSUSM’s REU Site: NGS from Beetles to Beer

- Slack Page
- Blog Posts ([https://csusmbioreu.weebly.com/blog](https://csusmbioreu.weebly.com/blog))
- Graduate Student Mentor
There are a couple of things we would like to do differently this next year

• Develop a more robust mentorship training program
• Reach out more frequently to younger members of the cohort
• Go grunion hunting on the 2\textsuperscript{nd} or 3\textsuperscript{rd} day of the run, not the 1\textsuperscript{st}!
Benefits of the REU Program to CSUSM

- Leveraged to fund larger College Wide Summer Scholars Program
- REU projects integrated into the curriculum of several courses
- Donations from Illumina
- Secure an iSeq100
- Data generated to advance faculty research
- Stimulated new thoughts and ideas for faculty research
One of the biggest challenges is supporting students when they return to their home institutions.

- Developing REU sites with a discrete partner
- Providing mentors resources during the academic year to continue to engage with mentees
Student assessment of learning gains (SALG) is easy to use and helpful, but including free response questions can be very informative

- What are you most proud of having accomplished this summer?
- What did you learn that surprised you?
- What did you discover about yourself as a young research scientist?
- In what ways were the weekly meetings beneficial to you?
- What would you do differently if you had the opportunity to do the research again?
- What challenged you and how did you meet the challenge?
- What three words would you use to describe research?
- What did you like best about the program?
Questions & Answers

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Engaging Students in Research Internationally

2017-2020 IRES Program in Mathematics

International Site: Uzbekistan Academy of Sciences

Dr. Zair Ibragimov

California State University, Fullerton

Zair Ibragimov, Ph.D.
Professor, Department of Mathematics
Cal State Fullerton
zibragimov@fullerton.edu
Project Overview

- Contemporary research in STEM fields has become a truly international endeavor and hence it is important that U.S. students grasp this early on and start cementing their international network of researchers.
- The aim of the IRES in Uzbekistan project was to give U.S. students 10-week, summer research experiences under the mentorship of prominent Uzbekistan scientists, who are leaders in various areas of STEM and are well qualified to mentor the U.S. students.
- The program was funded by the National Science Foundation (NSF Grant #1658672) and by the CSU-LSAMP program (NSF Grant #1826490).

Zair Ibragimov
California State University, Fullerton
zibragimov@fullerton.edu
Project Overview

- Under the program, three separate cohorts of U.S. students over a three-year period (2017-2019) conduct research.
- Total of 29 students (25 Math, 2 Biology and 2 Physics majors) including 13 CSU students.
- The project gave the U.S. students an opportunity to expand their research skills while expanding their network of international connections.
- The project provided ample opportunities for U.S. students to learn about the benefits of engaging internationally.
Activities

• Working in a diverse and vibrant research environment and collaborating with their foreign peers on cutting-edge research.

• U.S. students were exposed to a unique style of teaching and mentorship enriching their learning experiences.

• Visiting several universities to meet with faculty and students, holding joint panels on international education, and presenting talks at seminars and conferences.

• Several students took language courses in Uzbek and Russian.
Cultural Activities

- Uzbekistan presents a unique opportunity when it comes to cultural enrichment activities.
- Four sites in Uzbekistan are listed as UNESCO World Heritage sites.
- Participants visited these places as part of their cultural enrichment activities as part of the cultural component of the project.
Engaging Students in Research Internationally

Zair Ibragimov  
California State University, Fullerton  
zibragimov@fullerton.edu
Results

• Participants made over 20 presentations at several national and international venues and published jointly with their foreign mentors/peers 17 papers in peer-reviewed journals, also available on our website.
Lessons Learned

- Engaging students in international research is considered as High Impact Practice, contributing to the pipeline of a more diverse, robust, and internationally trained U.S. scientists.
- 14 are in Ph.D. programs and 6 are in Masters’ program and 3 are planning to enter Ph.D. Programs.
- Inclusion of professional development and networking activities along with rich cultural components is a key for success.
- To me, one of the most important and impactful parts of my IRES position was the opportunity to observe and appreciate Uzbek culture... to see all of this while simultaneously doing substantial mathematical research as an undergraduate was a terrific opportunity that would not have been nearly the same anywhere else. I feel that I have left this program both with a better picture of what graduate mathematics will be like and a substantially broader perspective to look at the world with.
Next Steps/Long-Term Plans

• We plan to continue the IRES in Uzbekistan program and plan to apply for another NSF grant.

• Because of its success programs from other U.S. institutions are now placing their students with their own funding.

• In 2020 we selected 12 students from institutions/programs across the U.S. who were placed in our program funded by several LSAMP Alliances and similar programs.
We have already expanded the program to IRES Track II – Advanced Studies Institutes in Uzbekistan funded by the National Science Foundation (NSF Grant # 1953471). This program is for advanced graduate students and will be running during 2022-2023.
Summary

- The project gave the U.S. students international research experience in Uzbekistan under the mentorship of a prominent Uzbekistan scientists and presented them with unique professional development opportunities. Students participated in the research life of their respective Institutes.
- The students attended lectures on the history and culture of Uzbekistan and traveled to the ancient Silk Road cities to learn about the history and scientific heritage of Uzbekistan.

Foreign Mentors

Zair Ibragimov
California State University, Fullerton
zibragimov@fullerton.edu
Students participated in many events which were highlighted by several local media outlets and brought much publicity to the program in Uzbekistan. Many program participants gave interviews to several media outlets of Uzbekistan.

The project provided unique research opportunities to URM students and positioned them to pursue graduate degrees.

11 female, 8 Hispanics and 7 Asian/Pacific Islander students.

Summary

Foreign Mentors

Zair Ibragimov  California State University, Fullerton  zibragimov@fullerton.edu
Questions & Answers

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In it for the Long Run: Developing an REU-Site with a Private Landowner

Paul Laris—Cal State Long Beach

Paul Laris, Professor & Chair
Cal State Long Beach, Department of Geography
Paul.Laris@csulb.edu
In it for the Long Run: Developing an REU-Site with a Private Landowner

REU-Site-Tracking Land Change (TLC): Working Ranch to Working Reserve

Experimental prescribed fire

River Ridge Ranch, Springville California
Points I’ll Cover Today

• 1. History
  • Undergraduate research tradition at CSULB

• 2. Opportunities
  • Forge a solid partnership for long term research at the RRRanch

• 3. Constraints
  • How to fund your faculty mentors?
In it for the Long Run: Developing an REU-Site with a Private Landowner

Build on a Track Record of Undergraduate Research Projects

California State University, Long Beach
GeoDiversity
Geoscience Diversity Enhancement Program
Geology, Geography, Geoarchaeology, Environmental Science and Policy

GDEP PROJECTS, SUMMER 2010

This summer featured a more complex mix of activities than previous summers. There were two classic GDEP field and lab research projects, a research trip out to Rapa Nui (Easter Island), an extended field trip, and a teaching workshop. Here is a brief overview of each of these.

Palos Verdes Hydrogeology Project

Dr. Greg Holk led a classic GDEP field and lab research project out to the Palos Verdes Peninsula. There, the team collected well water samples around the Portuguese Bend landslide. In the lab, they did chemical isotope analyses to learn the sources of the water at depth, which lubricates the weak layers in the landslide. They found that quite a bit of this water is exotic, with isotope signatures suggesting exotic irrigation water. This would have been useful information back in the 1950s and 1960s, after the slide reactivated and suburban homeowners claimed that Caltrans’ work on the Crenshaw Extension is what triggered it.

Recovering and Stable California Sage Scrub

Drs. Paul Laris and Chrys Rodrigue led a project that tried to find factors that might differentiate areas where CSS is recovering into exotic annual grassland from those in which it has been unable to make headway into the exotic grassland. The team took soil samples and did plant identification and coverage studies along several transects across an ecotone, mainly in the westernmost Santa Monica Mountains (which required campouts). Soil turned out not to be significantly different on either of these boundaries, but the team was able to identify pioneering species that can lead the way into the grassland, which may be useful information for restoration projects.
History of the REU idea: Build on a record of collaborative research at the “site”

Gary Adest, Ranch owner and biologist
In it for the Long Run: Developing an REU-Site with a Private Landowner

Took time to Develop our Partnership and Goals
In it for the Long Run: Developing an REU-Site with a Private Landowner

Built Bunkhouses together
In it for the Long Run: Developing an REU-Site with a Private Landowner

Began experimenting with tech at the ranch
Some challenges

1. Format of proposal- be sure to read closely before you begin, especially if you have done traditional NSF proposals
   1. The trick is to have a broad intellectual focus or framework with plenty of room for students to **formulate** their own research questions.

2. How to support faculty?
   1. These are a labor of love but use every possibility you can find.

3. Surprise! We got dinged for failing to elaborate the things we do best!
What Now?:
Building a student-oriented database and recruiting

River Ridge from a drone’s eye view
Good Luck!

My 3-year-old son watching a Drone launch at RRR
In it for the Long Run: Developing an REU-Site with a Private Landowner

Questions & Answers

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CSULB/ Geography Department
Paul.laris@csulb.edu
Monterey Bay Regional Ocean Science REU

Corey Garza- California State University, Monterey Bay

Corey Garza, Professor
CSU Monterey Bay, Department of Marine Science
cogarza@csumb.edu
Recent NSF statistics: Approximately 13% of ocean science graduate students are underrepresented (NSF 2018).

Biological Sciences slightly higher percentage, 18%.

Whole number comparison: 379 total underrepresented Geoscience, 9520 in the Biological Sciences.
No progress on diversity in 40 years

Ethnic and racial diversity are extremely low among United States citizens and permanent residents who earned doctorates in earth, atmospheric and ocean sciences. Worse, there has been little to no improvement over the past four decades.

Rachel E. Bernard and Emily H. G. Cooperdock

**Fig. 1** PhDs earned by US citizens and permanent residents between 1973 and 2016. a. The total number of PhDs for all races, ethnicities and genders combined have fluctuated around 350 for the earth sciences, but have taken an upward turn from a stable base level in the last decade or so for ocean and atmospheric sciences. b. The largest race/ethnicity category by far is the White non-Hispanic PhD group. c. Focusing on what the NSF considers to be underrepresented minorities (that is, excluding White non-Hispanics and Asian non-Hispanics), and comparing with the increasing share of these groups in the US population (measured by decadal census and 2016 estimate), it becomes clear that gains in Hispanic or Latino PhDs largely reflect an increase in the relevant population in the US, and that there are no gains in PhDs earned among the other underrepresented groups. Data in a–c run from 1973 to 2016.
Low Student Diversity: Causes

- Lack of personal connection.
- Unclear understanding by students.
- Ineffective messaging and engagement, particularly at the early undergraduate stage.
- Historic overemphasis of certain fields (e.g. biomedical).
Monterey Bay Regional Ocean Science REU: Engaging Students in Diverse Research Activities

- Distributed REU Model
- California State University, Monterey Bay
- Elkhorn Slough National Estuarine Research Reserve
- Hopkins Marine Station of Stanford University
- Monterey Bay Aquarium Research Institute
- Moss Landing Marine Labs
- Naval Postgraduate School
- Focus on underrepresented students.
- Fall REU component.

Corey Garza  CSUMB/Marine  reu@csumb.edu
Monterey Bay Regional Ocean Science REU

REU Overview

• First and still only Ocean Science REU in the CSU system.

• The Monterey Bay REU has a special emphasis on recruiting first generation, low income and underserved students coming from research limited institutions.

• We give preference to sophomores and juniors in the selection process.
Recruit: Actively Reaching Out

• **Community College visits.** Coordinate with programs at local CCs and give workshops on how to successfully apply to our program.

• **Email blasts.** Individual emails with flyer to colleagues, contacts at HSI, HBCU & Tribal schools, MESA programs, letter writers for past applicants

• **Conferences.** SACNAS, AGU, ASLO

• **REU Lists & Listservs.** Pathways to Science, webGURU, Marine Careers, ASLO, Ecolog-L

• Recruitment and program development supported by full time REU staff.

Corey Garza      CSUMB/Marine      reu@csumb.edu
Monterey Bay Regional Ocean Science REU Activities

Marine Biology and Ecology

Marine Geology

Ocean Engineering

Oceanography
Activities

Technical Writing

Scientific Boating

Poster Preparation

Conference Networking
Results

- 70 students in the program
- 3 Native American, 7 African American, 26 Hispanic/Chicano, 6 Pacific Islander, 25 Caucasian. (63% URM). 4 U.S. Veterans
- 38 students from research limited institutions (12 Community College Students).
- 13 Engineering, 16 Oceanography, 5 Geology, 36 Marine Biology/Ecology
- 3 NSF GRFP Awardees, 3 NOAA Hollings Scholars.
REU Student: Daniel DeLeon

- Worked with Dr. John Ryan and Danelle Cline of MBARI to engineer software to detect different species of whales.
- Used Google software as part of the process.
- Featured as part of a Google campaign to demonstrate how people use their software.
- Transferred to the Engineering program at Cal Poly San Luis Obispo after receiving Associates Degree from Cabrillo College.
- Graduate program in Fisheries at Oregon State University.
• Worked with Dr. Charlie Paull of MBARI.

• Used his interest in Math to examine the origin of seafloor scours around hydrothermal vent communities.

• Accepted to MIT/WHOI Joint Ph.D. Program in Oceanography.

• 2017 NSF Graduate Research Fellowship Program.

• 2020 Forbes 30 under 30 for his research on green energy.
REU Student Profile: Taylor Eddy

• Worked with Dr. Jim Harvey of Moss Landing Marine Labs.

• Examined marine mammal movement relative to shipping traffic in San Francisco Bay.

• Awarded NOAA Fellowship to undertake Masters Thesis at CSUMB. Studied trophic dynamics in and out of Marine Protected Areas.

• 2021 M.S. from CSUMB/MLML.

• Coastal research specialist with USGS.
REU Student Profile: Dr. Danielle Perry

• Worked with Dr. Kerstin Wasson and Dr. Rikke Jeppesen of Elkhorn Slough.

• Examined impact of nutrient runoff on marsh vegetation.

• Awarded top student presentation in ecology at 2014 SACNAS conference.

• 2020 Ph.D. from University of Rhode Island.

• Climate change adaptation scientist with Massachusetts Audubon.
Lessons Learned

• Leveraging multiple REU partners diversifies research opportunities and the pool of potential mentors.

• Multiple REU partners provides students diverse pathways to leverage their undergraduate coursework.

• Need active recruitments strategies, in person visits and social media.

• Staffing can support professional development goals for an REU program.
Monterey Bay Regional Ocean Science REU

Questions & Answers

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Next Steps/Closing Remarks

Dr. Frank A. Gomez
Executive Director, STEM-NET
Office of the Chancellor

https://www2.calstate.edu/impact-of-the-csu/research/stem-net

Frank A. Gomez  CSU Office of the Chancellor  fgomez@calstate.edu
Webcast Feedback Survey

Please take a few moments to tell us about your webcast experience.

Use the QR Scan Code to download it
Join our CSU STEM-NET Community listserv
csustemnet@lists.calstate.edu

Begin a Conversation with Colleagues and Join our Private CSU STEM-NET Facebook Group
https://www.facebook.com/groups/2629611737269292

Frank A. Gomez  CSU Office of the Chancellor  fgomez@calstate.edu
STEM-NET Virtual Research Café 10.0

• September 17th 11AM-12PM
  Registration Here

Presenter 1/ Dr. Santosh KC
San Jose State University
Chemical and Materials Department
Presentation Topic:
Surface and Interface Properties of 2D Materials

Presenter 2/ Dr. Liz Kyonka
East Bay
Psychology Department
Presentation Topic:
Surface and Interface Properties of 2D Materials

Presenter 3/ Dr. Wing To
Stanislaus State
Physics Department
Presentation Topic:
Adaptive Interdisciplinary Research into Atmospheric Effects of California Wildfires
Save the Date

STEM-NET October Webcast

- NIH-Funded CSU Institutional Training Grants & Research Education Programs Webcast, October 1st 10AM-12PM

Registration Here:
THANK YOU FOR JOINING US TODAY!
For more information about STEM-NET visit our website: