

Center for Advanced STEM Education (CASE)

Pathways to Science

Dr. Hsiu-Ping Liu

Lori Taylor, Program Manager

Linda Sivertson, Interim Program Development Manager



METROPOLITAN STATE UNIVERSITY™
OF DENVER

Benefits of an Undergraduate Research Experience

- **Building relationships**
- **Gaining hands-on research experiences**
- **Mastering content knowledge**
- **Developing skills**
- **Learning about graduate and/or professional educational opportunities**
 - It is a fantastic investment.
 - It can make a graduate school application stand out.
 - Value letter of recommendation from undergraduate research faculty

EngAge

Engineering Achievers in Graduate Education

We are looking for the brightest young engineers and applied scientists interested in pursuing a Ph.D. in engineering or applied science disciplines to attend an all-expense-paid weekend in New York City for the Columbia Engineering **EngAGE** program.

Who is Eligible?

Priority will be given to college juniors from historically underrepresented groups. Columbia University is committed to creating and supporting a community diverse in every way

When is the event?

The annual Columbia Engineering **EngAGE** weekend will be held **February 1-3**.

What's included?

In addition to an all-expense-paid-weekend in New York City, you will meet with our admissions staff and learn how to prepare a competitive graduate school application.

EngAge

Engineering Achievers in Graduate Education

How do I apply?

Deadline: December 22, 2017

Online Application: <https://columbiaengineering.wufoo.com/forms/z1irdhc914jo65l/>

Application Requirements:

- Complete and submit the Columbia Engineering EngAge Application. Online: <https://columbiaengineering.wufoo.com/forms/z1irdhc914jo65l/>
- Transcripts
- Statement of Purpose
- Resume
- One Letter of Recommendation should be emailed directly to kg2581@columbia.edu by the recommendation provider.



INSPIRING MINDS. DEFINING THE FUTURE.

WAVE Fellows Program

The WAVE Fellows program provides support for talented undergraduates intent on pursuing a Ph.D. to conduct a 10-week summer research project at Caltech.

The program aims to foster diversity by increasing the participation of underrepresented students in science and engineering Ph.D. programs. The program is extended, but not limited, to underrepresented minorities, women, first-generation college students, geographically underrepresented students, educationally or financially disadvantaged students, and students with disabilities.

Deadline: Jan 12, 2017

Online Application: <http://www.sfp.caltech.edu/programs/wavefellows>

Application are evaluated based on

- Student has sufficient academic preparation to undertake a research project at Caltech/JPL
- Student's prior research experience
- Application provides a clear description of the student's research interests, what the student has done to foster his/her interests, and student's academic and career goals
- References are supportive
- Student's research interests are aligned with those of a mentor at Caltech or JPL
- Student is interested in pursuing a Ph.D.



COSTA RICA

Research Experience for Undergraduates (REU)

Are you curious about the natural world?



"Coming from native and pacific islander backgrounds, we all understood the impacts of being minority in the scientific field. Such an opportunity like this gave us confidence in reaching success in the field."

We are looking for undergraduate African Americans, Hispanic Americans, American Indians, Alaska Natives, Native Hawaiians, and Native Pacific Islanders, who are curious about the natural world, and also:

- are adventurous
- are willing to invest their summer months doing original research in the tropical forests of Costa Rica
- are willing to integrate their research experience into their future careers by presenting their results
- are willing to make new friends and scientific contacts from across the globe
- are willing to work hard, and take full advantage of this stupendous opportunity that is truly a stepping stone towards a scientific career



What is REU?

REU is a summer opportunity for undergraduate African Americans, Hispanic Americans, American Indians, Alaska Natives, Native Hawaiians, and Native Pacific Islanders students to complete ecological research. It takes place at the OTS La Selva Research Station and OTS Las Cruces Research Station, through support of the NSF Louis Stokes Alliances for Minority Participation Program (LSAMP). Summer funding allows student interns to complete an original research project while guided by experienced researchers.

For program dates, deadlines and detailed information, please visit:

www.tropicalstudies.org/reu

REU Highlights

- Design and carry out original scientific research in a tropical rain forest.
- Introduction to tropical biodiversity and ecology.
- Ideal conditions for research on forest fragmentation, restoration ecology, water quality, tropical biodiversity, and climate change.
- Daily contact with experienced scientists from a variety of biological disciplines.
- Presentation of results in the internet-broadcast REU symposium.





Ten reasons why **you** should apply to REU if you are African American, Hispanic American, American Indian, Alaska Native, Native Hawaiian, or Native Pacific Islander

1. REU is an opportunity to immerse yourself in your own scientific research project.
2. Participating students come from similar, but diverse cultural backgrounds.
3. Each year REU students come from many educational backgrounds including isolated community colleges, tribal colleges, and other LSAMP institutions.
4. Summer activities include instruction in research methods, tropical ecology, statistical analysis and scientific writing.
5. One-on-one mentoring during your individual research project.
6. This paid 9 week summer internship covers all travel and basic living expenses in addition to giving you a stipend.
7. Make life-time contacts with scientists outside of your home institution.
8. Gain international experience.
9. The program is adaptable to your interests, skills, and abilities, as you can either develop a novel independent project from conception to presentation or you can collect and present data from an important piece of an ongoing research project.
10. Lack of experience does not limit participation and completion of REU.



Photo Credits: Scott T. Walter and Adriana Baltodano

"I liked that everything was independent and hands on. I got the opportunity to design and execute a research project, something that most undergrads would never be "trusted" to do on their own."

Questions?

Please contact:
kattia.mendez@tropicalstudies.org
www.tropicalstudies.org/reu



How to apply

Click on the Apply Now button on the program page and follow the online instructions to fill out the application on-line. At the end of the application you will be required to upload the following documents in pdf format:

- A letter of recommendation from your Home Mentor (download the mentor recommendation form)
- A letter of recommendation from a Science Professor (download the science recommendation form)
- Official transcripts

Creating a Winning Application

Cover the basics

- Meet deadlines with time to spare
- Demonstrate that you can follow directions - please answer questions

Pay attention to details

- Double check for spelling and grammar errors
- Make sure your email, phone & address will be active
- Check your email regularly

Use your resume, essays and personal narrative to show who you are

- Show interest, enthusiasm, and motivation
- Demonstrate relevant skills or experience

Demonstrate strong writing skills and show proficiency in the English language

- Use Career and Writing Center

Know how to get strong letters of reference

- Choose references carefully – your skills, ambition and work ethic

Writing Strong Essays and Personal Statements

Use your own voice and make a case for yourself

- Pseudo-interview

Convey information that the selection committee will find compelling in making its decision about your application

- Why the opportunity you are applying for is important to you
- How it fits into your aspirations
- How it will help you achieve academic ambitions and professional goals

Provide the opportunity to address what might appear to be gaps or weaknesses in your application

- Turn weakness into strengths

Writing Strong Essays and Personal Statements

Developing the content, addresses the questions asked, and ends with polishing the spelling, grammar and formatting to perfection

Start early, plan well, and give yourself the luxury of enough time

- Why are you interested in the particular opportunity or institution to which you are applying?
- What are your academic or research interests?
- How did you become interested in this field or research?
- What kind of activities or experiences have you had that have contributed toward your interest in, preparation for, or understanding of this field or research area?
- What are your aspirations?

Research Experience for Undergraduates

National Science Foundation - Research Experience for Undergraduates
https://www.nsf.gov/crssprgm/reu/reu_search.jsp

Search for an REU Site

- Astronomical Sciences
- Atmospheric and Geospace Sciences
- Biological Sciences
- Chemistry
- Computer and Information Science and Engineering
- Cyberinfrastructure
- Department of Defense (DoD)
- Earth Sciences
- Education and Human Resources
- Engineering
- Ethics and Values Studies
- International Science and Engineering
- Materials Research
- Mathematical Sciences
- Ocean Sciences
- Physics
- Polar Programs
- Small Business Innovation Research (SBIR)
- Social, Behavioral, and Economic Sciences

SEARCH BY RESEARCH AREAS/KEYWORDS:

Enter full or partial research areas/keywords separated by commas:
(e.g. geophysics, ecology, nano, robot, ethics)

And/Or State:

All

CO-WY AMP

CO-WY AMP Summer Research Initiative (SRI)

<http://www.coamp.colostate.edu/sri.shtml>

Application Deadline is January 15, 2018

CO-WY AMP Summer Research Initiative (SRI) Partners

http://www.coamp.colostate.edu/docs/SRI_opportunities.pdf

CO-WY AMP International Research Experience (IRE)

<http://www.coamp.colostate.edu/ire.shtml>

CO-WY AMP

CO-WY AMP Summer Research Initiative (SRI) Partners

Rev: 10/3/2017

REU Application Deadline	Institution	City	Site Name	Site URL	Department	Research Topics/Keywords
early February 2018	CU Boulder	Boulder	An Interdisciplinary Undergraduate Research Experience in Solar and Space Physics: The University of Colorado and Its Consortium Partners	http://lasp.colorado.edu/reu/	Lab for Atmospheric and Space Physics	solar physics, space physics, climate science, magnetosphere, heliosphere, upper atmosphere, Sun-Earth system, space weather; Participating institutions include NCAR High Altitude Observatory, NOAA Space Environment Center (both in Boulder, CO), and Center for Integrated Space Weather Modeling (Boston, MA)
early February 2018	CU Boulder	Boulder	Materials Research Science and Engineering Center (MRSEC)*	http://lcmrc.colorado.edu/outreach/undergraduates.html#UROP		Liquid crystals, optical materials and devices; *No active agreement in place yet with CO-WY AMP
Not yet funded for 2018, will know in Jan/Feb	CU Boulder	Boulder	REU Site: Achieving heightened goals- Undergraduates Research in Ecology at the Mountain Research Station	http://www.colorado.edu/eeb/EEBprojects/reu/	Institute of Arctic and Alpine Research, Mountain Research Station	Biology, ecology, evolution, behavior
early February 2018	CU Boulder	Boulder	REU Site: Physics/JILA*	http://www.colorado.edu/physics/Web/reu	Physics	Atomic, Molecular, Optical and Condensed Matter Physics; *No active agreement in place yet with CO-WY AMP
Not yet funded for 2018, will know in Jan/Feb	CU Boulder	Boulder	REU Site: Research Experience for Community College Students (RECCS) in Critical Zone Science*	http://cires.colorado.edu/outreach/RECCS	Cooperative Institute of Research in Environmental Science (CIRES)	Critical Zone Science; *Program is limited to community college students from Colorado.
12-month ongoing program	University Corporation for Atmospheric Research (UCAR)	Boulder	Significant Opportunities in Atmospheric Research and Science (SOARS)*	http://www.soars.ucar.edu/	National Center for Atmospheric Research	Atmospheric Science, solar physics, computational methods. *SOARS is not funded through the REU Site program, but encourages applications from members of underrepresented and disadvantaged groups. Ongoing 12 month program.
	UNAVCO	Boulder	University NAVSTAR Consortium	http://recess.unavco.org/		NSF facility supporting geodetic research and education. Research Experiences in Solid Earth Science for Students (RESESS) internships.
early April, 2018	UCCS	Colorado Springs	Machine Learning in Natural Language Processing and Computer Vision	http://www.cs.uccs.edu/~ikalita/reu.html	Computer Science Department	Natural language processing, syntax, semantics, information retrieval, computer vision, face recognition, incremental learning, large-scale learning, artificial neural networks, deep learning
early March 2018	CSU	Fort Collins	Integrative Agroecology and Sustainability Summer Research Fellowship Program 2017	http://studentacademic.agsci.colostate.edu/integrative-agroecology-and-sustainability-summer-research-fellowship-program-2017/	Agricultural Sciences	Successful applicants will have strong interest/experience in agroecology and sustainability research that is typically explored through Agricultural Sciences, Business, Environmental Sciences, Life Sciences, Natural Sciences, or Sustainability Sciences majors. Spend your summer conducting research that addresses complex challenges in global food security and environmental change. Get paid to explore your scientific, and cultural interests as you work side by side with leading scientists at Colorado State University.
early February 2018	CSU	Fort Collins	Research Experiences for Undergraduates in Climate Science at Colorado State University	http://kiwi.atmos.colostate.edu/smei/reu.html	Atmospheric Science	atmospheric science, atmospheric chemistry, air quality, severe storms, mesoscale meteorology, remote sensing, climate dynamics, climate modeling, atmospheric dynamics

CO-WY AMP

CO-WY AMP Summer Research Initiative (SRI) Partners

Rev: 10/3/2017

REU Application Deadline	Institution	City	Site Name	Site URL	Department	Research Topics/Keywords
	CSU	Fort Collins	REU Site: Chemistry Applied to Real World Problems - Chemical Sciences at CSU	http://www.chem.colostate.edu/reu/	Chemistry	Materials chemistry, atmospheric and environmental chemistry, polymer chemistry, inorganic chemistry, organic chemistry, physical chemistry, chemical biology
early February 2018	CSU	Fort Collins	REU Site: Engineering Applications of Extreme Ultra-Violet (EUV) Laser Light	http://euverc.colostate.edu/education/REU/REU.shtml	Electrical Engineering	X-ray optics, lithography, microscopy, nanotechnology, laser science, electrical and computer engineering, physics
early February 2018	CSU	Fort Collins	REU SITE: Program in Molecular Biosciences	http://www.bmb.colostate.edu/undergraduates/reu/program-description/	Biochemistry and Molecular Biology	biochemistry, neurobiology, cell biology, infectious diseases, structural biology, plant biology, cardiac biology, DNA repair, radiation biology, gene regulation, chromatin, development
early February 2018	CSU	Fort Collins	Sustainable Urban Water Transdisciplinary Research Program for Undergraduates	https://erams.com/UWIN/urp/		
	CSU	varies	RMSSN Summer Academy and pollinator hotshot crew	https://rmssn.wordpress.com/attend/rmssn-summer-academy/2015-summer-academy-application/		Environment and sustainability; U.S. National Park Service and spend a week in Grand Teton National Park and Yellowstone National Park; Involved with helping identify critical declines in pollinators for national parks;
	NREL	Golden	National Renewable Energy Laboratory	www.nrel.gov		
early March 2018	Mines	Golden	Site: Research Experiences for Undergraduates in Renewable Energy	http://remsec.mines.edu/reu.htm	Physics	Next Generation Photovoltaics, Advanced Membranes
early February 2018	Rocky Mountain Biological Laboratory	Gothic	REU Site: Field Research in Ecology and Evolutionary Biology at the Rocky Mountain Biological Laboratory	http://www.rmbi.org/		field research, ecology, evolutionary biology, ecological genomics
early February 2018	Univ of Wyoming	Laramie	REU Site: Wyoming Astronomy	http://www.uwyo.edu/physics/reu-info/index.html	Physics and Astronomy	astronomy, astrophysics, instrumentation
	Cary Institute of Ecosystem Studies	Millbrook, NY	Cary Institute's Research Experiences for Undergraduates	http://www.caryinstitute.org/students/reu-program	Ecology	

Questions? Comments?

- Center for Advanced STEM Education website
www.msudenver.edu/case
- Hsiu-Ping Liu, hliu1@msudenver.edu
- Lori Taylor, ltaylo50@msudenver.edu
- Linda Sivertson, lsivert@msudenver.edu