



UROOP Newsletter

Official Newsletter of the Undergraduate Research Opportunities
Program at the University of Hawai'i at Mānoa

Office Information

- Location: Moore 107/108 (virtual appointments only)
- Office hours: 10:00 am - 3:00 pm, M-F
- To schedule a virtual appointment, please email us 24 hours in advance
- Phone: (808) 956-7492
- Email: urop@hawaii.edu

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UROOP turns 10!

Hau'oli lā hānau e UROP, which turned 10 this year! We have much to celebrate with the success of programs old and new, like our long-standing student project and presentation funding opportunities, which to date have provided ~\$3.5 million in scholarship funding directly to ~1,300 undergraduate students pursuing research and creative work endeavors. We take great joy in the successful implementation of more recent activities like the Summer Undergraduate Research Experience (SURE) program (p. 8), which launched in 2018 and has since welcomed 400 student participants. We also celebrate the many individuals who make UROP so much more than the small handful of staff members. They are the outstanding faculty mentors who dedicate their time and expertise to guide the next generation of researchers and creative thinkers (p. 3,7,9-10). They are our accomplished students who are literally inventing solutions to mitigate climate change (p. 11), unlocking the mysteries of dark matter in our galaxy (p. 12), and bringing history to life on the big screen (p. 12). Finally, they are the people and entities who brought UROP into existence and help it continue to thrive today.

As we celebrate this milestone, we acknowledge the Office of the Vice Provost for Research and Scholarship and the Office of the Provost, which have championed our mission since our move in 2018, as well as the Honors Program in the Office of Undergraduate Education, where UROP was originally initiated and housed. We thank the Harold K.L. Castle Foundation, Douglas S. Yamamura Scholarship, Mānoa Enrollment Office, and other offices and units on campus for their collaboration and transformative financial gifts, which have enabled UROP to support critical office staff positions and additional student scholarships. Finally, we acknowledge our wide-ranging partner programs and academic units, administrative staff, and campus offices, whose shared wisdom and collaboration have eased our growing pains these 10 years. To our campus, readers and the entire UROP community, we look forward to many more years of reflection and continued growth, and hope you will join us on the journey.

Douglas S. Yamamura Scholarship

UROP is honored to present the Douglas S. Yamamura Scholarship to outstanding undergraduate students enrolled in any field of study who are engaged in UROP-funded research and creative work projects. The scholarship was established with a generous endowment from the estate of Paul T. Yamamura to support scholarly work at UHM.

Each academic year, UROP considers all undergraduate project funding applicants for the prestigious Douglas S. Yamamura Scholarship and selects the best STEM and the best non-STEM student or student group to receive the scholarship.

The Summer 2021 Douglas S. Yamamura Scholarship recipient for a non-STEM project is Sarah Hamid. Her project, entitled "Reproductive Health During the Territorial Period of Hawai'i," seeks to examine archival medical journals, records, and material to better understand the context of reproductive health during the Territorial period of Hawai'i. Sarah is mentored by Dr. Stephanie Teves (Department of Women's Studies).



Sarah Hamid

"By examining these records, the context of reproductive health will be further examined and situated in the context of US colonialism and occupation of Hawai'i during the territorial period."
- Sarah Hamid

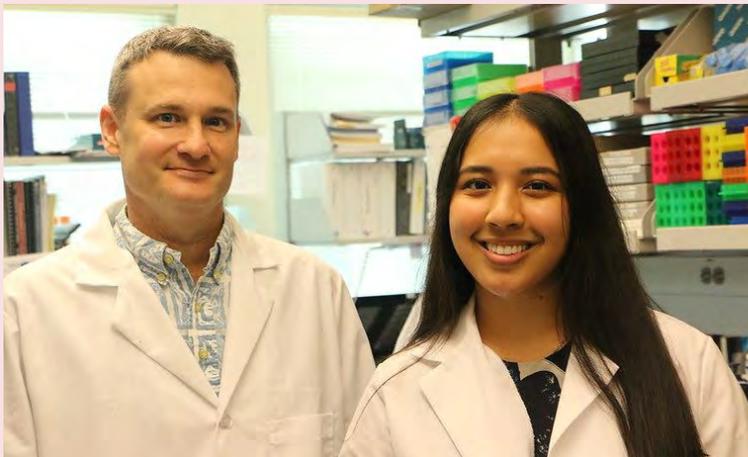


Photo: Dr. Ben Fogelgren (left) with Geetika Patwardhan (right), who joins a handful of Goldwater Scholarship recipients from UHM.

Photo credit: Paula Bender

The Goldwater Research Scholarship is a national scholarship for STEM students, established by Congress in 1986 with the purpose of supporting the education and developing the talent of highly-qualified students in critical fields. Each Goldwater Scholar receives up to \$7,500 annually to cover the cost of tuition, mandatory fees, books, and room and board until graduation.

Learn more about the Goldwater Research scholarship and how to apply at: goldwater.scholarsapply.org/

Geetika Patwardhan Claims Prestigious Goldwater Award

Congratulations to Geetika Patwardhan on becoming a Goldwater Scholar for her research on Alzheimer's disease! Geetika is majoring in Molecular Cell Biology and is currently receiving UROP funding for her project, "Identifying New Regulators of Amyloid-Beta in Neurons," mentored by Dr. Benjamin Fogelgren (Department of Anatomy, Biochemistry, and Physiology). Geetika's research focuses on how amyloid-beta plaque builds up in the brain, which is one of the main causes of Alzheimer's Disease. By determining causes of plaque accumulation, potential pharmaceutical treatments for Alzheimer's can be identified.

Read more about her accomplishments at: go.hawaii.edu/J5S

2021 Summer Faculty Mentoring Grant Recipients

In March 2021 UROP closed out the Faculty Mentoring Grant for Summer Undergraduate Research and Creative Work, which provides faculty mentors with funds to support student research and creative work projects in the summer. We received 28 proposals requesting a total of \$243,173. Thanks to generous support from the Provost's Office and the Mānoa Tuition Scholarship fund, we were able to provide \$107,000 in funding to support 13 projects.

Congratulations to the 2021 recipients of the Faculty Mentoring Grant for Summer Undergraduate Research and Creative Work!

- **David Beilman**, Professor, Department of Geography and Environment
- **Monique Chyba**, Professor, Department of Mathematics
- **Daniel Harris-McCoy**, Associate Professor, Department of Languages and Literatures of Europe and the Americas/Classics
- **Karolina Heyduk**, Assistant Professor, School of Life Sciences
- **Monica LaBriola**, Assistant Professor, Department of History
- **Joel Moffett**, Assistant Professor, Academy for Creative Media
- **Nhu Nguyen**, Associate Professor, Department of Tropical Plant and Soil Sciences
- **Daniel Owens**, Assistant Professor, Department of Molecular Biosciences and Bioengineering
- **Melissa R Price**, Assistant Professor, Department of Natural Resources and Environmental Management
- **Jayme Scally**, Junior Specialist, Honors Program
- **Zhuoyuan Song**, Assistant Professor, Department of Mechanical Engineering
- **Ty Kawika Tengan**, Associate Professor, Department of Ethnic Studies; and **Keali'i Kukahiko**, Faculty
- **Kristi West**, Associate Researcher, Hawai'i Institute of Marine Biology

The Request for Proposals for the 2022 Faculty Mentoring Grant will open in early 2022.

For updates and more information, visit:
go.hawaii.edu/VKs

A Message from the UROP Director



Dr. Creighton M. Litton

Aloha mai kākou. I hope that this finds everyone well, either finishing the Fall semester up or relaxing and enjoying the holiday break with family and friends. I know that I am looking forward to spending time with loved ones, on the ocean, and in my yard and garden to refresh and rejuvenate for the coming semester. While there are signs of a “new normal” surrounding the COVID pandemic, it will be some time before our state and campus emerge from the fiscal implications of the past several years. So while we are experiencing record enrollment of 1st yr students and high overall enrollment campus-wide, we continue under a hiring freeze with greatly reduced staff and faculty positions across campus. That is hard for our remaining staff and faculty who now carry the workload spread across fewer hands and minds. Yet, we must continue to offer our degree programs and the myriad learning opportunities that occur outside of the classroom for the thousands of eager students that we are here to serve and support. I see all around me, every single day, examples of excellence in staff and faculty in going the extra mile to support all of our haumāna, both inside and outside of the classroom. As such, I would like to dedicate this issue of the UROP Newsletter to all of the staff and faculty on campus who work tirelessly every day to allow our campus to move forward despite the uncertainties and challenges that confront us today, and lie ahead. While students are the heart and soul of our campus, they would not be here without all of your selfless dedication of time and energy. Mahalo nui loa.

Farewell, Deborah!



We bid Deborah Yuan a heartfelt farewell as she studies abroad at National Taiwan University in Spring 2022. She is looking to expand her horizons, gain new experiences, and eat good food while connecting back to her cultural roots. Deborah joined the UROP team in April 2020 where she utilized her graphic design and business background as our Undergraduate Communications Assistant. While at UROP, she has worked on social media posts, newsletters, and updating the website with new opportunities. She has developed independent working skills

and learned the importance of task management, all while pursuing a double BBA major in Marketing and International Business. Deborah plans to graduate in Spring 2023 and pursue a career in marketing. Despite joining UROP at the tumultuous onset of the COVID-19 pandemic, when each new day brought uncertainty and unexpected changes, Deborah quickly established herself as a dependable and adaptable member of the team. Though she will be greatly missed, we are delighted to see her off to a world that is opening back up. Mahalo e Deborah!

A Hui Hou, Michelle!



We bid Michelle Tom farewell as she goes to Lana'i next semester for her Spring 2022 clinical rotation and wraps up the last year of her Nurse Practitioner program. Michelle joined the UROP team in March 2021 where she served as the program's Graduate Assistant. Michelle was vital in promoting UROP's opportunities and assisting in processing project and presentation funding applications, hosting information sessions, working with students and faculty individually, and helping to set up UROP's online appointment system due to the COVID pandemic. She is a graduate student in UH Mānoa's Doctor of Nursing Practice – Family Nurse Practitioner program. Michelle plans to graduate at the end of Summer 2022 and will pursue a career as a Nurse Practitioner. Although it is sad to see her go, we look forward to her future opportunities. Mahalo e Michelle!

New Online Resources for Faculty Mentors and Aspiring Graduate Students

UROP is happy to announce two new pages on our website that provide helpful resources to faculty mentors and aspiring graduate students. The "Mentorship Resources" page provides a list of mentor expectations, best practices, feedback from past UROP mentors, and published articles on mentoring undergraduate research and creative work. We hope these materials provide insight on what mentoring an undergraduate student entails, and ways to promote a positive and fulfilling experience for both faculty mentors and students. The "Prepare for Graduate School" page caters to current undergraduate students who are considering attending graduate school as the next step in their career. This page offers guidance on how to explore and select a program, a list of funding opportunities, tips on how to build a relationship with a graduate school advisor, and much more. Preparing for graduate school can be a time of difficult decisions, so we hope this page helps students decide if graduate school is the right next step, and how to begin the process to get there if it is.

Visit the "Mentorship Resources" page at: go.hawaii.edu/VKC

Visit the "Prepare for Graduate School" page at: go.hawaii.edu/UyV

UROP IS HIRING



GRADUATE ASSISTANT (GA)

20 HOURS/WEEK

\$22,140 ANNUAL SALARY

100% TUITION WAIVER FOR QUALIFYING GA

APPLY BY DECEMBER 5

UROP is hiring a half-time Graduate Assistant! To be eligible for the position, a student must be enrolled in 6 credits per semester in a degree-seeking Masters or PhD program at UHM, and have at least a 3.0 GPA. The desired candidate must have excellent written and communication skills and be able to problem solve and learn new tasks. The Graduate Assistant will be responsible for advising undergraduate students, staff, and faculty on UROP's Project and Presentation funding opportunities, screening funding application submissions, and more. Read the full position description and apply by December 5 at: go.hawaii.edu/nRV

UNDERGRADUATE COMMUNICATIONS ASSISTANT

12-20 HOURS/WEEK

\$13.05/HOUR

APPLICATION OPENS IN LATE DECEMBER

UROP is hiring a part-time Undergraduate Communications Assistant! Eligible candidates must be enrolled in at least 6 credits per semester as a UHM undergraduate student, and have at least a 2.0 GPA. The desired candidate must have demonstrated knowledge in social media platforms and desktop publishing. The Communications Assistant is responsible for actively promoting UROP to student organizations and the larger University community, managing UROP's social media campaign, maintaining the Student Opportunity Center database, and more. The employee will work at the UROP office and/or remotely. The position will be listed on the SECE student employment website in late December. At that time, you can view the full job description on sece.its.hawaii.edu by searching **Job Number 247046**. Inquire with UROP staff at any time at urop@hawaii.edu.





FACULTY AND STUDENT SPOTLIGHT

with Lillian A. McIntyre and Dr. Kristi Govella



Lillian poses under a red umbrella.

“The presence of foreign video games in Japan is fairly small – the Xbox 360, which was popular globally, held only 2.6% of the Japanese home console market share at its highest point! Exploring why this is in detail helped me to understand more about the history of Japanese gaming and how companies interact with their core fanbases.”

Lillian McIntyre received UROP project funding in Spring 2021 to support a project entitled “Foreign Frustrations and Domestic Dominance in Japan’s Video Game Industry” under the mentorship of Dr. Kristi Govella (Department of Asian Studies). Lillian’s project intended to investigate why foreign companies were failing to successfully enter the Japanese video game market. Her idea for the project came from her experience coding Japanese-language data about foreign companies. This was part of a faculty-mentored research project that she conducted alongside Dr. Kristi Govella with the support of a Summer 2020 Faculty Mentoring Grant for Undergraduate Research and Creative Work. Through this process, Lillian noticed that there were few foreign gaming companies represented in the data.

She looked at many Japanese-language primary and secondary sources, from stock market data to game developer interviews, in order to analyze the dynamics of Japanese gaming markets. She concluded that foreign companies struggle in the Japanese gaming market because established Japanese companies benefit from path-dependent factors, which depend on a company’s history. These factors may lead to a company developing and repeating successful patterns, such as releasing games with established characters alongside a new hardware launch. This is a disadvantage for foreign companies, as they do not have a tried and true pattern that they can follow. Her work demonstrates that gaming companies in Japan take advantage of these patterns; these practices extend to the mobile gaming genre as well, drawing on examples such as Type-Moon’s “Fate/Grand Order.”

As of Fall 2021, Lillian is back at UHM as a graduate student studying Japanese video games in a literary context where she plans to utilize the background knowledge from her undergraduate project in her graduate research.

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Dr. Govella on mentoring undergraduate students:

“Undergraduate research played a pivotal role in my own development as a scholar, so it has been incredibly rewarding for me to be able to pass on that experience to a new generation of students. As a mentor, I try to help my students to shape their nascent ideas into actionable research questions, pushing them in productive directions but always encouraging them to take the lead on their projects. I emphasize that research is an iterative, non-linear process: even if students feel like they’re not making any progress on writing, sometimes the most important parts of the research process happen during their periods of quiet reflection or when they hit a roadblock that catalyzes them to rethink their initial approach. My greatest reward as a mentor is seeing students develop confidence in their ability to tackle complex issues—this is something that will serve them well in the future, regardless of what career they choose to pursue.”



A Hui Hou to One Esteemed UROC Member, and E Komo Mai to Four New UROC Members!

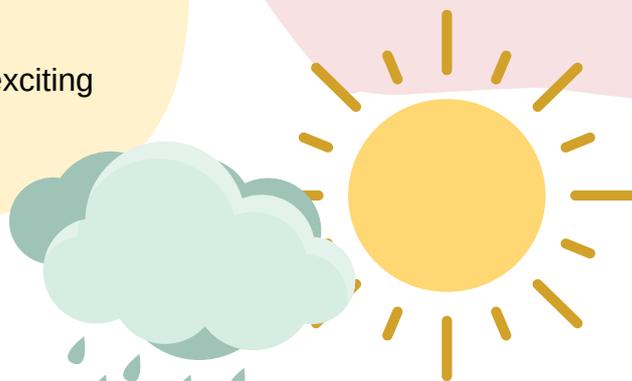
It is with both joy and sadness that we bid farewell to one of our Undergraduate Research Opportunities Council (UROC) members, Dr. David Royer (Department of Special Education).

Dr. Royer has been an enthusiastic faculty mentor and member of the UROC since Fall 2019. His expertise in Special Education brought a grounded perspective and mindful consideration for student learning outcomes to the UROC. He has accepted an Assistant Professor position at the University of Louisville, which he amusingly quips is worth a trip to witness the Kentucky Derby and enjoy a refreshing mint julep.

We wish Dr. Royer all the best in his exciting new adventures!

In happy news, we welcome the following four new faculty members to the UROC! We very much look forward to working together moving forward.

- **Daisuke Takagi**, Associate Professor, Department of Mathematics
- **Ashley Rubin**, Associate Professor, Department of Sociology
- **Mapuana Antonio**, Assistant Professor, Department of Public Health Studies
- **Erin Kahunawai Wright**, Associate Professor, Department of Educational Administration



2021 SURE PROGRAM AND SURE SYMPOSIUM RECAP

UROP hosted the annual Summer Undergraduate Research Experience (SURE) program from June 3 to July 30, 2021. The SURE is a free 9-week program that provides supplementary infrastructure to undergraduate students conducting faculty-mentored research and creative work at UHM during the summer. SURE offers professional development modules once every 1-2 weeks on topics like writing resumes and cover letters, exploring and applying to graduate school, responsible conduct of research, and more. Importantly, it also provides students with a cohort of peers with whom they can interact and confer as they navigate their projects. The 2021 SURE program concluded with the SURE Symposium on July 30, 2021, where undergraduate students showcased their work in a professional, yet relaxed environment and received feedback from fellow students, faculty, and the community. Due to the COVID-19 pandemic, the event was hosted online for the second year in a row.

In line with a steady trend of increasing involvement since 2018, this year's program once again broke participation records. The SURE cohort grew from 125 students in 2020 to 147 in 2021, and the 2021 SURE Symposium was our largest event to date. This was due, in part, to the virtual nature of the event that allowed students, faculty mentors and guests to join us from across 5 different U.S. time zones stretching from Hawai'i to the East Coast. Combining 86 student presenters and 300 registered guests, ~386 people attended the event. Students represented 36 different majors, and delivered 26 oral and 43 poster presentations spanning a wide variety of topics including "Quantifying feral pig rooting across multiple Hawaiian ecosystems" and "Developing an English-Hawaiian Classical Dictionary," among many others.

We are grateful to all those who continue to support undergraduate research and creative work activities on our campus. We thank volunteers for their time and enthusiasm, staff for their tireless effort, and motivated students and faculty mentors for sharing their knowledge and passion with the UHM community. The SURE program and SURE Symposium would not be possible without you!



Learn more about the SURE program at: go.hawaii.edu/qY3

Photo: Screenshot from "Project KUALIMA" presented by Vanessa Liang (top) and Jessica Lau (bottom) at the 2021 SURE Symposium

2021 OVPRS Faculty Award for Excellence in Mentoring Undergraduate Research and Creative Work Recap and Winners

Congratulations to Professor Lisette Marie Flanary and Dr. Megan Porter, the 2021 recipients of the Office of the Vice Provost for Research and Scholarship (OVPRS) Faculty Award for Excellence in Mentoring Undergraduate Research and Creative Work! This award was established by UROP in Spring 2020 to recognize up to two outstanding UHM faculty mentors of undergraduate students, one each from a STEM and a non-STEM discipline. The Faculty Award for Excellence in Mentoring Undergraduate Research and Creative Work is currently the only campus-wide award that recognizes faculty for outstanding mentorship of undergraduate students. This recently-established award complements existing awards that recognize excellence in undergraduate student, graduate student and faculty research, and excellence in graduate student mentoring (**see p. 10**).

Candidates for this award were first nominated by current or former undergraduate student mentees. After initial review by the review committee, a subset of nominees were asked to submit full application materials to be reviewed based on several criteria, including their record of mentoring undergraduate research or creative work, the impact of their mentorship on students' academic and professional achievements, and letters of support. Recipients of the award receive a \$500 monetary award from the OVPRS/UROP. UROP would like to thank and congratulate Professor Flanary and Dr. Porter for their achievements and thank them for their impactful contributions to students, their department, their college and the University of Hawai'i at Mānoa.

Megan Porter is an Associate Professor in the School of Life Sciences in the College of Natural Sciences. Stemming from the quote "Every person takes the limits of their own field of vision for the limits of the world" (adapted from Arthur Schopenhauer), her mentoring philosophy is to challenge students to view the world from different perspectives by studying how different animals see their environment. She regards independent research as a critical component of undergraduate education, and often a transformative experience for students. At the University of Hawai'i she has fostered research opportunities for undergraduate students in multiple contexts, including individual projects in both the field and the lab, as well as course-based undergraduate research experiences (CUREs). She works closely with students at each step of their project to help them develop their individual interests and explore opportunities for the next steps of their career paths.

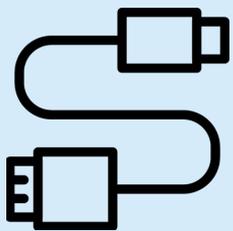


Lisette Marie Flanary is an Associate Professor of Digital Cinema in the Academy for Creative Media who teaches courses in screenwriting, producing, critical studies and indigenous filmmaking. As the director and producer of Lehua Films, Lisette creates documentaries that celebrate a modern renaissance of hula and Hawaiian culture. Her award-winning films, *AMERICAN ALOHA: Hula Beyond Hawai'i*, *Nā Kamalei: The Men of Hula*, and *ONE VOICE* have been broadcast nationally on public television and shown in film festivals around the world. Her latest film, *TOKYO HULA*, the final film in a trilogy of hula documentaries exploring the explosive popularity of hula in Japan, premiered at the Hawai'i International Film Festival in November 2019. *TOKYO HULA* was recently awarded the Best Moana Whārahi Films From the Pacific Award at the Doc Edge Film Festival in New Zealand and was also the winner of Best Feature Film at the Made in Hawai'i Film Festival in 2021. The Hula Trilogy broadcasted on the Pacific Heartbeat Season 10 series on PBS Hawai'i in May-June 2021.

Calling for nominations for the
**2022 OVPRS Faculty Award for
Excellence in Mentoring
Undergraduate Research and
Creative Work!**

Learn more at: go.hawaii.edu/3kA





Hamilton Library Launches Loanable Technology Collection

Hamilton Library has just launched a brand new loanable technology collection open to all UH students and faculty members! The collection includes items like GoPro cameras and accessories, microphones, USB-C adaptors, and more! Equipment can be borrowed for up to 1 week with the possibility of an additional 1-week renewal if there are no other requests. The collection embraces technology and creative equipment as tools to engage not only with classroom curriculum, but also research and creative endeavors outside the classroom. This is an excellent new resource for UROP-funded students or any other student working on intellectual endeavors in need of short-term equipment loans. Learn more and view the full collection on the library website at: manoa.hawaii.edu/library/devices

UHM Awards Honor Members of the UROP 'Ohana

Each year, UHM honors the leadership and service of its faculty, staff and students committed to enhancing the university's mission of excellence through the UH Mānoa Awards. This year, a number of awardees can be found among our own ranks of UROP-affiliated faculty mentors (UROC members and faculty mentors of UROP students) and students (UROP award and grant recipients). We are pleased to highlight these individuals and their well-deserved 2021 awards.

UROC members:

The Frances Davis Award for Excellence in Undergraduate Teaching

A Zachary Trimble, Associate Professor, College of Engineering

Presidential Citation for Meritorious Teaching

Kasey Barton, Associate Professor, College of Natural Sciences

Pratibha Nerurkar, Associate Professor, College of Tropical Agriculture and Human Resources

UROP project funding recipient:

Student Excellence in Research Award

Victor Kilonzo, BS Molecular Cell Biology (2021) and BS Psychology (2021)

UROP-funded student project faculty mentors:

Presidential Citation for Meritorious Teaching

Kristi Govella, Assistant Professor, College of Arts, Languages & Letters

Sladjana Priscic, Associate Professor, College of Natural Sciences

Faculty Award for Excellence in Mentoring Undergraduate Research & Creative Work

Lisette Marie Flanary, Associate Professor, Academy for Creative Media (**see p. 9**)

Megan Porter, Associate Professor, School of Life Sciences (**see p. 9**)

Congratulations to the awardees!

Read more about the UH Mānoa Awards at: go.hawaii.edu/PGr



UROP Students in the News

Students who conduct UROP-funded projects during their undergraduate careers at UHM are addressing global issues, discovering new knowledge and contributing their skills for the betterment of UHM, the local community, and the world. UROP celebrates these students and their newsworthy accomplishments.

Going Green to Make Green: Developing a Sustainable, Cost-Effective Roof Structure

Shelby Cerwonka and Jasmine Reighard, who graduated in Spring 2021 from the Department of Natural Resources and Environmental Management, College of Tropical Agriculture and Human Resources, are the creators of an environmentally-friendly and sustainable roof design that combines natural moss with recycled fishing nets. Mentored by Dr. Camilo Mora from the Department of Geography and Environment, the two received UROP funding in Summer 2020 for their project, "Cost Effectiveness of Green Roofs Using Native Hawaiian Moss." They developed their project with the goal of tackling climate change at a household level. They wanted an environmentally-friendly design that would keep homes cooler, thereby lowering electricity consumption and CO2 emissions.

Shelby and Jasmine began their project by researching different types of mosses and gathering materials needed for their project. The moss that they chose, *Leucobryum glaucum* (pincushion moss), helps to decrease a house's internal temperature, and is also commonly



Photo: Shelby (left) and Jasmine (right) work on growing moss as part of their project.

found in wet areas along the Ko'olau Mountains. They continued sourcing eco-friendly materials, using recycled fishing nets from Sustainable Coastlines Hawai'i. These nets created a "seawool" layer, which went in between the roof and the moss on top. The students attached the "seawool" on top of small wooden houses that they constructed for their project, growing the moss over that layer. Through the 2020-2021 school year, they grew the moss while collecting data and determining how to conduct the project efficiently.

After completing their initial project, Shelby and Jasmine also received presentation funding from UROP to present their project at the National Conference on Undergraduate Research 2021. In the future, the two plan to publish an academic paper on their findings and commercialize their creation.

Learn about UROP student project funding at:
go.hawaii.edu/Qm3

Learn about UROP student presentation funding at:
go.hawaii.edu/PFG

Read about the Green Roof project at: go.hawaii.edu/PDm

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Family-Inspired Student Film Debuts at Hawai'i International Film Festival

UROP alumni Malia Adams (BA Creative Media, 2020) and Mahina Smith (BA Creative Media, 2021) debuted their short film *I Will Be Your Breath* at the 2021 Hawai'i International Film Festival in November 2021. The film is the final product of their UROP-funded project "Directing a Film from a Native Cultural Perspective," where they were mentored by Professor Lisette Flanary. The film follows a young Native Hawaiian woman named Kamahina as she explores her connection to her great-grandmother, who survived the tumultuous cultural upheaval of Hawai'i in the early 1900s. The story is inspired by Malia's own great-grandmother, who learned 'Ōlelo Hawai'i, or the Native Hawaiian language, on her own after it was banned in 1896. The film has been met with highly positive reception, and even caught the attention of local news channel KHON2's Living808 segment.

Watch the full Living808 interview and learn more about the film at: go.hawaii.edu/WKV



Top: Title screen showing Malia Adams in the short film *I Will Be Your Breath*.

Bottom: Yellowfoot limpet (*Cellana sandwicensis*), or 'opihī 'ālinalina, the subject of Angelica Valdez's study (see p. 13) (photo credit: Kanoe Morishige)

Exploring the Many Facets of Atmospheric Sciences

John Fast, an undergraduate student at UHM majoring in Atmospheric Sciences, has participated in a wide variety of research projects since his first semester at UHM in Fall 2019. John received UROP funding in Spring 2020 for his project "Water Isotope Analysis in Hawaii," which he conducted under the mentorship of Dr. Giuseppe Torri (Department of Atmospheric Sciences). In an effort to understand more about Hawai'i's rainwater, where 99% of Hawai'i's drinking water comes from, John analyzed oxygen and hydrogen stable isotopes across five rainwater collection stations. The information can be used to predict rainfall and drinking water availability in the future. In the summer of 2021, John participated in the Earth Science on Volcanic Islands (ESVI) Research Experience for Undergraduates (REU). The program, hosted at the School of Ocean and Earth Science and Technology and funded by the National Science Foundation, investigated sulfur in vog using lasers. The clouds formed by the sulfur compounds in vog can lead to acid rain and the depletion of ozone. After graduating in May 2022, John hopes to work for the National Weather Service in the National Oceanic and Atmospheric Administration or as a local weather reporter in the U.S.

Read more about John's story at: go.hawaii.edu/VKe

Bridging the GAPS in Modern Physics

Two UHM undergraduate students, Layne Fujioka and Hershel Weiner, are participating in the General AntiParticle Spectrometer (GAPS) experiment, which will fly a large, stadium-sized balloon over Antarctica. This experiment may reveal the nature of dark matter in our galaxy, a big step for modern physics. Layne, a mathematics major who graduated in Spring 2020, received UROP funding on the project "GAPSolute Reality." With mentorship from Dr. Philip von Doetinchem (Department of Physics and Astronomy), Layne created an augmented reality app that shows how the GAPS experiment works. As of now, the app is available on Android, while development for the iPhone app has started this fall. Hershel, a physics major, received UROP funding in Summer 2021 and is actively working on the project with postdoctoral researcher Dr. Achim Stoessl and graduate student Cory Gerrity.

Read more about the Dark Matter Balloon project at: go.hawaii.edu/vgP

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Protecting Wedge-Tailed Shearwater Nesting

UROP alumnus **Jessica Idle** is making strides in the study of 'Ua'u kani, or wedge-tailed shearwater, a seabird species common in Hawai'i. As an undergraduate student, Jessica majored in Natural Resources and Environmental Management (NREM). She received UROP project funding in Spring 2018 for her project "Human Impact on the Nesting Success of Wedge-Tailed Shearwaters," under the faculty mentorship of Dr. Melissa Price (NREM). In Spring 2019, she obtained UROP presentation funding to present her findings at the Pacific Seabird Group Annual Meeting conference in Lihue, Kaua'i, where she was the runner up for the Best Student Paper Award. Jessica is currently a graduate student in the NREM Hawai'i Wildlife Ecology Lab with Dr. Price.

The wedge-tailed shearwater usually nests along coastlines. However, human development in nesting areas have forced the shearwaters to nest on small, undeveloped islands. The study, surprisingly, found no significant difference in nesting success when comparing the locations of an unprotected beach park and a site restricted to the public. The study's conclusions have convinced the City and County of Honolulu Department of Parks and Recreation to support and permit the installation of signage and protective fencing for the wedge-tailed shearwater colony at Kailua Beach Park on O'ahu.

Read more about the Seabird Nesting study at: go.hawaii.edu/VKp



Photo: Jessica Idle holds a wedge-tailed shearwater.

'Opihi Life History Study Published in Prestigious Journal

Angelica Valdez, a Spring 2019 graduate who majored in Marine Biology, was a member of a research team that published a study in *Nature Communications Earth & Environment* in August. Angelica received funding from UROP in Spring 2019 for her project "Exploring the life-history of Hawaiian limpets using oxygen isotope records," and was mentored by Dr. Jon-Paul Bingham.

'Opihi are collected by Hawai'i's commercial and non-commercial fishers for consumption and cultural purposes. However, the number of 'opihis harvested has drastically declined over the past century, signalling a need for more research and better management. The team examined three different yellowfoot 'opihis limpet shells and used their discoveries to trace their life-history. They were also able to determine the 'opihis' seasonal growth and longevity based on the increments of shell growth.

The research team included Erik Franklin, Anthony Mau, Kazu Nagashima and Gary Huss from UHM's Hawai'i Institute of Geophysics and Planetology, and Angelica, Philippe Nicodemus and Dr. Jon-Paul Bingham from UHM's College of Tropical Agriculture and Human Resources.

Read more about 'Opihi Growth Patterns at: go.hawaii.edu/vKV

Bringing Driverless Delivery to UHM

Members of UH Parcel Service (UHPS) have created a wireless prototype of a fully-autonomous delivery vehicle capable of traveling up to four miles per hour, carrying a load of up to 300 pounds, traversing up inclines of 15 degrees (more than most wheelchair ramps) and delivering and receiving packages. The project began in 2018 with funding from the College of Engineering and UROP.

UHPS's project is known as the "Autonomous Electric Vehicle System" project. Their project is one of the many Vertically Integrated Projects (VIP) at UHM. VIPs are long-term projects designed so that faculty mentors, graduate student researchers, and all involved undergraduate students can pass their knowledge to incoming participants.

Read more about UHPS's story at: go.hawaii.edu/PF8
Read more about VIPs at: manoa.hawaii.edu/uh-vip/



Student Race Representation in Undergraduate Research Opportunities Program Funding Proposals at University of Hawai'i at Mānoa

In line with the University of Hawai'i at Mānoa's (UHM) distinction as a R1 University with very high research activity, the Undergraduate Research Opportunities Program (UROP) coordinates and promotes opportunities for all undergraduate students across all disciplines at UHM to engage in faculty-mentored research and creative work. One of the signature opportunities that UROP offers the Mānoa campus is merit-based Project funding, which provides grant funding to undergraduate students who successfully propose a faculty-mentored research or creative work project. Since 2011, UROP has distributed ~\$3.5 million in funds to ~1,300 students in 78 disciplines. UROP celebrates the academic, professional, and personal accomplishments of these students and sincerely appreciates the faculty mentors who make this possible. While these achievements are laudable, to better meet UROP's mission to "promote and coordinate opportunities for all undergraduate students across all disciplines", it is important to dig deeper into these metrics to seek ways to better serve all undergraduate students.

Previously, UROP investigated student applicants' academic diversity and found that in the past three academic years: (i) the average number of applications has been trending upwards across all four broad disciplinary categories tracked (Arts & Humanities, Engineering & Computer Sciences, Natural Sciences, and Social Sciences); and (ii) that students from Science, Technology, Engineering, and Math (STEM) disciplines are more likely to submit an application (see Fall 2020, Volume 3, Issue 1, p. 10-11). This information has been used to target outreach to the campus focused on academic units not as well represented in the number of UROP Project funding applications based on their enrollment numbers.



Photo: Kahealani Acosta shows off the subjects of her undergraduate research investigating breadfruit nutrient deficiencies

This article reports on UROP student applicants' racial diversity. Nationally, studies indicate that underrepresented populations (i.e., Black or African American, Native American, Pacific Islanders) are less likely to engage in faculty-mentored research and creative work. UHM has one of the most diverse student populations in the nation, but how well represented is our diverse student body in UROP programs and activities? To address this question, UROP compared the racial demographics of the overall undergraduate student population with UROP funding applicants' racial diversity from 2011-2020, and specifically examined whether Native Hawaiian applicants' self-reported interactions with faculty were similar or different from other groups on campus.

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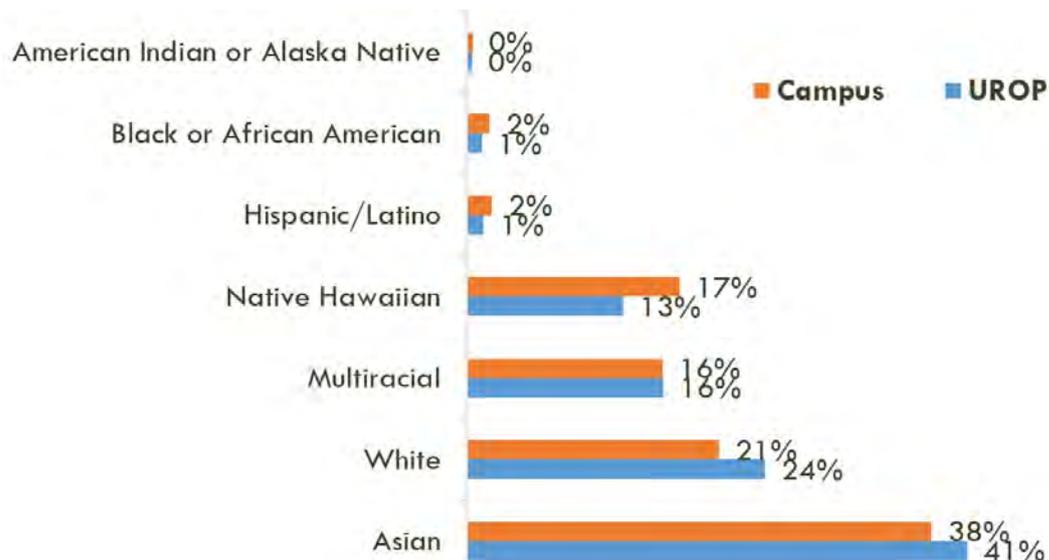


Figure 1. UROP Applicant ($n = 1,763$) vs. Overall Campus Enrollment by Race for AY11-AY20 ($n = 128,908$).

To address this, UROP first evaluated self-reported racial data of funding applicants since program initiation in 2011 (**Figure 1**). These data demonstrate, importantly, that Native Hawaiian students are somewhat underrepresented: 13% of total applicants were Native Hawaiian despite consisting of 17% of total campus undergraduate enrollment. Hispanic/Latino, Black/African American and American Indian/Alaska Native students are also underrepresented in applying for UROP funding. In contrast, White and Asian students are somewhat overrepresented in UROP applications based on their overall campus enrollment, while Multiracial students' representation in UROP is on par with the overall campus average.

Second, UROP evaluated self-reported interactions between applicants and faculty via a new Project Pre-Survey that was implemented in AY19 (**Figure 2**). Given the underrepresentation in applications submitted to UROP and the campus's strategic priority to being a Native Hawaiian Place of Learning, UROP specifically examined the data on Native Hawaiian students' interactions compared to all other student applicants (indicated as "All Other").

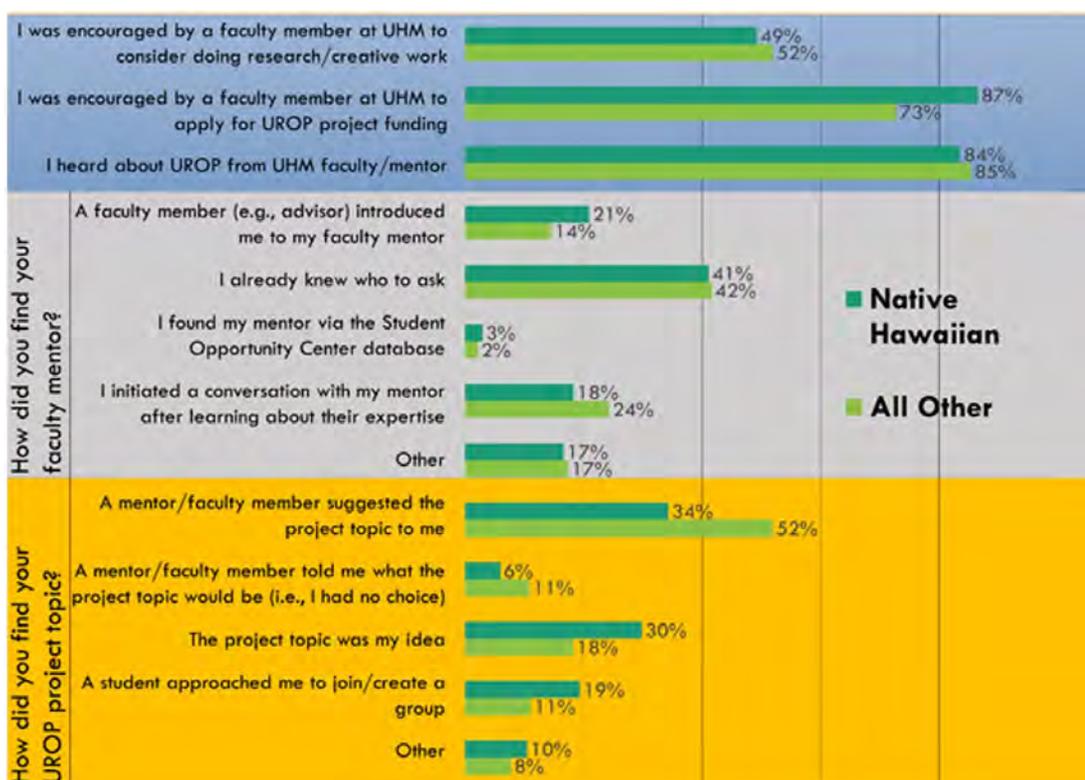


Figure 2. UROP Project Applicant Pre-Survey Results for AY20-AY21 ($n = 595$).

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There are three main takeaways from the Project Pre-Survey data comparing Native Hawaiian to All Other students at UHM. First, faculty actively encouraged students across all racial groups to consider doing research/creative work and to apply for UROP Project funding. However, faculty encouraged Native Hawaiian students to do research/creative work at a rate slightly below but consistent with All Other (49% vs 52%), and to apply for UROP funding at a rate higher than All Other (87% vs 73%). Second, in terms of identifying a faculty mentor, Native Hawaiian students were more likely to have been introduced to a faculty mentor by another faculty than All Other (21% vs 14%), but were less likely to approach a faculty mentor themselves compared to All Other (18% vs 24%). These two takeaways indicate that Native Hawaiian students received relatively similar or higher support from faculty than All Other students. Third, Native Hawaiian students were more likely to generate their own project topic (30% vs 18%) or be approached to join or create a group by other students (19% vs 11%) compared to All Other. In contrast, All Other students were more likely to have been suggested (52% vs 34%) or given a project topic (11% vs 6%) by a faculty mentor compared to Native Hawaiian students. Developing a project idea is a challenging and formidable task for most students, and it is encouraging that Native Hawaiian students are conceptualizing their own project ideas at a higher rate than All Other students. It is also commendable that more Native Hawaiian students are collaborating with other students to form groups or cohorts of investigators compared to All Others, as research and creative work are increasingly being conducted in more collaborative environments.



Photo: Malia Adams on the set of her undergraduate film project "Directing a Film from a Native Cultural Perspective."

UROP celebrates and supports different ways of knowing and conducting research/creative work, including different approaches to finding a project topic and identifying a faculty mentor. At the same time, as an office that exists within a Native Hawaiian-serving institution, UROP will work to encourage more Native Hawaiian students to consider participating in UROP funding opportunities to address their somewhat overall underrepresentation based on campus enrollment. Based on the survey data alone, underrepresentation of Native Hawaiian students in applications to UROP (compared to All Other) appears to be, at least in part, a result of differences in how Native Hawaiian students interact with faculty to identify project topics (i.e., Native Hawaiian students are more likely come up with their own topics and less likely to have been suggested or given a project topic by a faculty). As mentioned previously, conceptualizing a project idea is not an easy task for undergraduate students, and this should be applauded. However, more faculty mentor involvement in helping to generate project ideas could encourage more Native Hawaiian students to apply for UROP funding opportunities.

UROP will continue to evaluate student demographic representation to ensure that all undergraduate student racial and disciplinary groups are well-represented. In particular, UROP will follow up on these results by: (i) exploring why faculty mentors were less likely to give or suggest a project topic to Native Hawaiian students, and whether this may result in lower participation; and (ii) evaluating how racial diversity of faculty mentors impacts the racial diversity of undergraduate student applicants.

If you are interested in hearing more about this work, or have suggestions for future efforts that UROP might undertake in this context please do not hesitate to reach out to us at any time.



Student Opportunity Center

A new year means new opportunities to engage in hands-on work outside the classroom, and the Student Opportunity Center (SOC) is the place to start searching for opportunity listings! The SOC is a campus-specific subscription service available to the Mānoa campus courtesy of UROP with support from the Office of the Vice Provost for Research and Scholarship. The SOC curates a national database of thousands of opportunity listings (32,000+ nationwide opportunities), including: undergraduate research and creative work opportunities, internships and co-ops, conferences, seminars, publication outlets, and more. Listings cover a diversity of fields, and cater to students at any stage of their research and creative work endeavors. The SOC also hosts a UHM-specific database where faculty can post their own opportunities. This is an ideal place to recruit undergraduate students to work in labs, creative spaces, or elsewhere.



"The Student Opportunity Center has been extremely helpful to me and has made me excited for my future as a University of Hawai'i at Mānoa student."

"I'm able to find opportunities around the world that are specific to my degree when I graduate. Overall it's been a very positive experience for me!"



Left, above: Quotes from UHM students about the SOC

To learn how to access the SOC and start searching, visit:

go.hawaii.edu/GCg



"In Spring 2020 I posted an opportunity for UG volunteers...after two excellent inquiries I took the posting down. They have been amazing volunteers!"



Above: Quote from UHM faculty about the SOC

Benefits of using the SOC:

- It's **free** to use
- Listings are viewable by UHM undergraduates, staff and faculty only
- Keyword tags make it easy to search opportunities
- Listing an opportunity automatically generates a webpage for the listing
- You can list paid or unpaid positions
- You can edit listings any time

Attention Faculty: Calling for Student Opportunities!

Faculty, do you have open positions in your lab or creative space? Are you looking for student help with field work or film production? Do you have any virtual opportunities for students? The Student Opportunity Center is the perfect place to advertise research and creative work opportunities to undergraduate students at UHM. The SOC allows you to customize listings and provide details such as compensation, position requirements, application deadlines, and more.

To learn how to post opportunities on the SOC, visit:

go.hawaii.edu/kD3



Highlighted Opportunities

UNDERGRADUATE CARDIOVASCULAR RESEARCH

go.hawaii.edu/Vga

- Undergraduate student research position to work in Dr. Kathryn Shunke's (John A. Burns School of Medicine) lab
- Focused on regulation of the HIF-1 response by chromatin reader, PRKCBP1
- Design and perform experiments, collect data, and analyze molecular and cell biology experiments
- Students interested in molecular and cell biology research encouraged to apply
- Rolling deadline

2022 AKAMAI INTERNSHIP

akamaihawaii.org/interning/

- 8-week STEM internship
- Mentorship by an engineer or scientist while working on a project that identifies a real need
- \$3,300 stipend, housing, and necessary travel expenses covered
- Open to undergraduate students studying in Hawai'i or from Hawai'i but studying on the mainland
- Dates: June 5 - August 5, 2022
- Deadline: February 14, 2022

2022 HAWAI'I CONSERVATION CONFERENCE

go.hawaii.edu/ygV

- Submit an abstract to present at the annual Hawai'i Conservation Conference
- Conference theme: "Pilina Maui Ola – Connections that Offer Resilience and Hope"
- Scientists, policy makers, students and community members will gather to share research on natural resource conservation and management in Hawai'i
- Dates: Mid/Late July 2022
- Abstract Proposal Deadline: February 25, 2022

LEARN MORE ABOUT THE STUDENT OPPORTUNITY CENTER

go.hawaii.edu/GCg

CTAHR SCHOLARSHIPS

go.hawaii.edu/FgV

- Over \$250,000 in scholarships available
- One application will apply you for all eligible scholarships
- Deadline: February 15, 2022

2022 PACIFIC INTERNSHIP PROGRAMS FOR EXPLORING SCIENCE (PIPES)

go.hawaii.edu/Vg8

- Internship opportunities with agencies and organizations involved in research, management, and education
- Focused on environmental issues in Hawai'i and the Pacific region
- \$5,000 stipend
- Location: Hawai'i Island
- Dates: May 31 - August 5, 2022
- Deadline: January 31, 2022

2021 FALL UNDERGRADUATE SHOWCASE

go.hawaii.edu/3is

- Professional yet relaxed presentation venue featuring UHM undergraduate student research and creative work project presentations
- Free to attend
- December 10, 2021 from 9:45 am - 12:35 pm on Zoom

TO VIEW THESE OPPORTUNITIES AND MORE:

studentopportunitycenter.com

1. Visit the Student Opportunity Center website
2. Create an account with your valid @hawaii.edu email address
3. Search for opportunities, or click the links in the previous listings to navigate directly to an opportunity page