



## Kapi'olani CC STEM Student's Research Gains National Recognition

by Louise Yamamoto

Melanie Keli'ipuleole of Kapi'olani Community College's Science, Technology, Engineering and Math (STEM) Program was invited by the Council on Undergraduate Research (CUR) to participate in the 19th Annual Posters on the Hill event on April 22, 2015 in Washington, D.C. Melanie's undergraduate research project was only one of 60 projects selected from approximately 500 applications. And, she is the first student from the University of Hawai'i System to participate in this prestigious event!

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## Project Olonā Update

by Mike Ross, Ethnobotany



Maria Petelo identifying active compounds in Popolo

The Spring 2015 semester has been a busy one for Project Olonā. We're continuing our partnership with Kamehameha Schools to research the best methods of cultivating plants used for traditional Hawaiian medicine, as well as isolating and identifying the bioactive compounds found within these plants. This semester, our students measured the growth rates of 'ilima (*Sida fallax*),

cont'd on back (Olonā)

## Local Students Emerge Victorious from D.C. STEM Conference

by Kendall Kido



(L-R) Jennifer Wong-Ala, Melanie Keli'ipuleole, Bryson Racoma, William Kao III, and Dr. Hervé Collin

Two community college standouts take first place at National Science Conference. Bryson Racoma and Melanie Keli'ipuleole brought home top honors at the 2015 Emerging Researchers National Conference (ERN) in Science, Technology, Engineering and Math held from February 19-21 in Washington D.C. Our students prevailed against entries from four-year colleges and research universities. Racoma's poster "NASA Simulation of an Autonomous Payload" (Faculty advisor: Dr. Hervé Collin) won in the Engineering category while Keli'ipuleole's poster on the Hawaiian Shingle Sea Urchin (Faculty advisor: MacKenzie Manning) beat out all other presentations in the Genetics field.

The ERN Conference in STEM targets graduate and undergraduate students participating in programs funded by the National Science Foundation (NSF) Division of Human Resource Development (HRD). Both William Kao III and Bryson Racoma received scholarships to attend this year's forum. Will punched his ticket on the strength of his presentation entitled "Forward Kinematics Analysis and Design of

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## On the Hill (cont'd from page 1)



Faculty Mentor Dr. Mackenzie Manning and Melanie Keli'ipuleole

Melanie's project focused on population genetics, the study of allele and genotype frequencies in a given population. Her research examines the population structure of the marine invertebrate species of *Colobocentrotus atratus*, also known as the shingle or helmet sea urchin or Ha'uke'uke in Hawaiian.

The Ha'uke'uke is found throughout the Hawaiian Archipelago where it is harvested for the consumption of its gonadal tissues, also known as uni.

As part of her research, Melanie collected tissues from multiple individuals along four different shorelines (north, east, west, south) from four different main Hawaiian Islands to determine the level of genetic connectivity within and between populations using a fragment of the Cytochrome Oxidase I (COI) mitochondrial gene. Melanie stated, "Previous research on taxonomically and ecologically diverse species shows genetic barriers between islands. Therefore, due to a relatively short larval duration (typically one month), we hypothesized that *C. atratus* would show low or absent gene flow between the different island populations." Melanie's research is culturally significant: by investigating the population structure of the Ha'uke'uke throughout the Hawaiian Islands, she hopes to formulate better management practices for this important cultural resource.

The purpose of Posters on the Hill is to help raise awareness of the significant value that undergraduate research has on our future and on our nation. Melanie's advisor and mentor for this research was Biology professor MacKenzie Manning. While in Washington, D.C., they had the opportunity to meet Hawai'i's Congressional delegation and share the level of scholarship being done in undergraduate research here in Hawai'i.

## New Marine Option Program at Kapi'olani

by Dr. Mackenzie Manning

Starting this Fall, students will be able to enroll in OCN 101, the Marine Option Program Seminar course required for the new Marine Option Program (MOP) Academic Subject Certificate (ASC) offered at KapCC. The MOP ASC is a 12-credit certificate program that promotes ocean awareness, understanding and appreciation through experiential, hands-on marine education.

Students from any field of study can obtain a marine related focus alongside their degree by earning the MOP ASC.



Not only do MOP students gain ocean knowledge through coursework and a hands-on marine related skills project, they become part of the UH system wide MOP network which is rich with job, internship and volunteer opportunities as well as ocean related field trips and experiences! Students can pursue their passion for the ocean and marine science through the MOP ASC, potentially enhancing job placement in any occupation where an in-depth knowledge of the ocean is applicable.

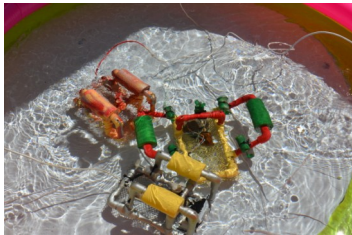


For more information please visit our website: <http://kccmop.weebly.com> or email [kccmop@hawaii.edu](mailto:kccmop@hawaii.edu).

## Summer Bridge Program Reaches Out to Underrepresented Students *by Kendall Kido*



For the past ten years, the Kapi'olani Community College Summer Bridge Program has been helping students with their transition into college. It began in 2005 with a grant from the National Science Foundation and the Tribal Colleges and Universities Program. The aim of this grant was to increase the number of indigenous and underrepresented students in the STEM majors. The first KCC STEM



Summer Bridge hosted 23 participants from 16 O'ahu high schools. This year, 71 students from across the state benefitted from this program.

KCC STEM Outreach Coordinator Keolani "Aunty" Noa has been there from the beginning. She says that, "Summer Bridge is the foundation, the piko - the start - the root of 'I can, I will, and I am.' It builds the confidence to find a place and a purpose in college."



Bridge participants are awarded a full scholarship that covers math course tuition, books, materials and lunch. The program has two tracks: HāKilo (biology, ecology, ocean chemistry) and 'IKE (engineering) that feature field related project based learning.

Looking at this year's class of A.S.N.S. Degree graduates, the majority of them got their start in Summer Bridge. A few are truly "miracle" students who had no intention of pursuing a college degree before participating in this program.

None of this would have been possible without all of the Kapi'olani CC Faculty members who lent their expertise. Austin Anderson (Math), Justin Carland (Engineering), Porscha Dela Fuente (English), Alan Garcia (Microbiology), Aaron Hanai (Engineering), Justin Kong (Math), Wendy Kuntz (Biology), MacKenzie Manning (Biology), Kathleen Ogata (Chemistry), Dennis Perusse (Math), Mike Ross (Botany) and Jacob Tyler (Engineering).



'IKE student Jack Faatiliga was very appreciative of all the support he received: "The mentors and the faculty really helped us and you felt like they actually wanted to be there. Dennis, (Professor Perusse) sacrificed a lot of his time just to make sure that not only did we get our work done but that we understood what we were doing."

HāKilo 1 Participant Jennifer Stockwell said, "I was able to meet new people and make new friends because of the program. It also taught me how to take initiative and become more independent by managing my own time during the math portion."

It takes a lot of effort to ensure the success of such an ambitious program. After many late nights and long hours, Mrs. Noa remains positive. "My vision is that one day these underrepresented students will become decision makers in the workforce."



From Left: Devan Tatemichi, Floria Bol, Lindsey McGinn, Bryson Racoma, Carin Jaber, Maria Petelo and Kim Kahaleua

### A.S.N.S. Graduate Reflections

*"Aunty has helped me so much during the years I've been at KCC. Being in her STEM program, I was exposed to many opportunities and networked with a lot of people who may play a role in my future career. The support and guidance from faculty members and other STEM students in the program have shaped me into the person I am today."*

-Kim Kahaleua

*"STEM helped me realize what I wanted to be. It made my path more clear on what I wanted to study. It also helped me grow as a person. I'm going to remember all the support from friends, advisors, professors. I'll always remember Aunty pushing us to do our best."*

-Maria Petelo

*"If not for STEM, I don't think I'd be here right now... I struggled through college initially but here I am today because I made up my mind to be a part of a program that made a huge difference in my life. Thank you for everything"*

-Carin Jaber

*"It's the best program, that's all I got to say. Don't think about it; just do it."*

-Bryson Racoma

## Congratulations STEM Program! 2015 Summer Internship Listing

<b>Paul Alexander Awo</b>	Kupu on O'ahu	<b>Maria Petelo</b>	Native American & Pacific Islander Research Experience (NAPIRE) in Costa Rica
<b>Andrew Chang</b>	Ka Huliau UH-Hilo Summer Intern Bridge	<b>Lindsey McGinn</b>	QEM Summer Internship Program for the Science Educated-Focused Internship in Washington D.C.
<b>Tiare-Kailima Haole</b>	Ka Huliau UH-Hilo Summer Intern Bridge	<b>Leah Shizuru</b>	National Science Foundation Science and Technology Initiatives Summer Undergraduate Research Internship Experience at UHM
<b>Carin Jaber</b>	PIPES Internship on O'ahu	<b>Nalu Thain</b>	QEM Summer Internship Program for the Science Educated-Focused Internship in Washington D.C.
<b>William Kaoe III</b>	Akamai Internship with France, Canada, and U.S. Telescopes in Hilo	<b>Tyler Trent</b>	Ka Huliau UH-Hilo Summer Intern Bridge
<b>Kimberly Kahaleua</b>	Ka Huliau UH-Hilo Summer Intern Bridge	<b>Jennifer Wong-Ala</b>	Pacific Islands Fisheries Science Center (PIFSC) for Young Scientists on O'ahu
<b>Melanie Keli'ipuleole</b>	C-MORE on O'ahu		
<b>Augustine Luc</b>	NIH/NIDDK Short -Term Research Experience for underrepresented Persons (STEP-UP)		
<b>Ka'iulani O'Brien</b>	Ka Huliau UH-Hilo Summer Intern Bridge		
<b>Celest Kanani Pali</b>	USGS on the Big Island		

### Growing Our Garden: From Conception to Construction

*by Carin Jaber*

Aloha Mai Kākou, Kapi'olani Community College,

While you were all away enjoying your summers, we were working hard to complete the KCC Rain Garden Project, and we did! This was a student driven project headed up by Carin Jaber, faculty adviser Dr. Wendy Kuntz, facilities adviser Mr. Gordon Mann and in collaboration with the KCC STEM Program, KCC Summer Bridge Program, the KCC Ecology Club, the ESW (Jason Salseg, Genna Wann-Kung), Alex Lum, Andy Hood, Prof. Ross, Dr. Aaron Hanai, Dr. Anderson, Malama Maunalua, O'ahu Resource Conservation and Development Council, Hui O Ko'olaupoko and so many more.



A rain garden is a depression in the ground that is used to infiltrate rain water and pollutants that collect on impervious surfaces. Typically, pollutants will collect on sidewalks, roads and rooftops and then when it rains they all get washed away and deposited into storm drains, eventually polluting the oceans. The concept of a rain garden is to divert that polluted water into the garden where it can be naturally filtered and redeposited into the island's natural water table.

Keeping in mind that we not only wanted to decrease pollutants in the ocean but to serve multiple purposes on-campus, we searched for ideas on how else we could

use the garden to benefit us. We decided to grow only native plants in the garden. These plants could then be used as a living laboratory for a number of classes on campus.

We also considered any existing problems that the campus had and attempted to either alleviate them or at least not add to them. Parts of the lower campus will flood when there is a heavy rain so we hoped that the location we chose may catch some of the rain off the sidewalk as it flows down campus.

Since KCC also has an issue with mosquitoes, we designed the garden to drain fast enough to prevent breeding mosquitoes.

Other rain gardens that we researched had problems keeping up maintenance so the decision was made to turn ours into a service learning project. Placing students in charge of garden upkeep saves the college money in addition to helping students learn.

We collaborated with many students, faculty, advisers, clubs and organizations. We have involved biologists, botanists, hydrologists, engineers, and many other disciplines. It has been a huge effort on so many levels and the day we all worked so hard to get to is finally here.



*If you'd like to get involved with the Rain Garden or sign up for service learning please contact Carin Jaber at [cjaber@hawaii.edu](mailto:cjaber@hawaii.edu)*

## Building a Better World: National Engineering Organization Launches Local Chapter

by Michael Rodriguez and Jason Salseg

To many, learning to live in harmony with nature while enjoying modern innovation and technology sounds like either a pipe dream or a distant, futuristic reality. There are some who believe this to be impossible altogether. One new club on campus seeks to make this dream a reality. Now. Engineers for a Sustainable World (ESW); a national organization of students, university faculty and working professionals; welcomes its newest chapter on the campus of Kapi'olani Community College. Kapi'olani ESW joins over 50 other chapters in universities across North America.

The local Hawai'i chapter, which plans to coordinate with other higher education institutions in the state, was spearheaded by student Jason Salseg with the help of Kapi'olani CC faculty members Dr. Harry Davis and Dr. Aaron Hanai. Jason says the goal of Kapi'olani ESW is to, "engage future engineers who are still at the college and middle school and even elementary school level with hands on activities that benefit the community and have a focus on sustainability driven projects. Starting their focus now will have a tremendous impact later in the field of engineering."



ESW Solar Cart

The club had its first meeting in April and hit the ground running. Within three weeks, they designed and built their first project: a functional solar powered cart delivering a hearty 500 watts per hour. Local companies, Solar Cool, All-Build Construction, Universal Manufactures & Re-Use Hawaii donated materials, and club members Yu Gong, Geena Wann, Will Kaeo, Bryson Racoma, Jackson Poscablo, Joe Valle, Michael Rodriguez and Jason Salseg designed and constructed the functional cart which debuted for the Earth Day event on April 20th. Club member Geena



From left top: Dr. Aaron Hanai, Jason Salseg, Dr. Austin Anderson, Geena Wann and Carin Jaber

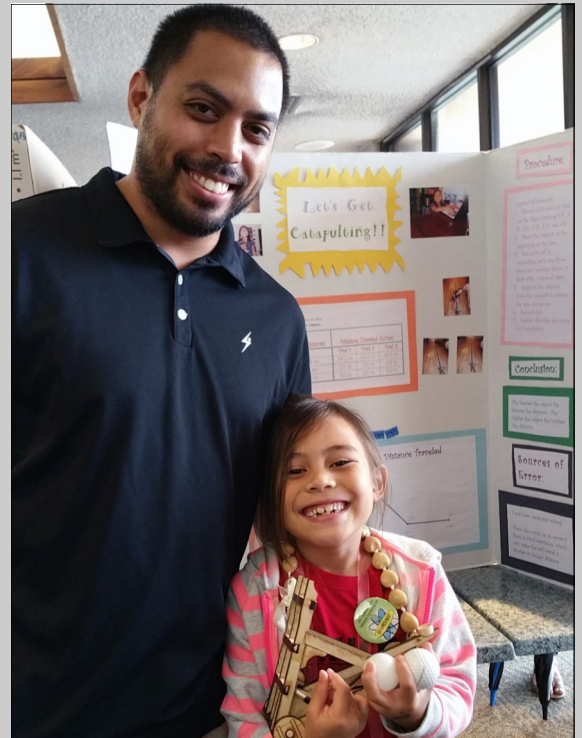
Wann said, "we are still small, we are still new, so by taking on these smaller projects we can work towards a bigger goal. We hope, in the future, we can get to the point where we can be completely sustainable."

Kapi'olani CC ESW is looking forward to the future. They plan to tackle other renewable energy projects like biodiesel, hydroponics and hydrogen cell technologies. With such lofty goals, it helps that members hail from so many different engineering

majors. Currently, Computer Engineering, Electrical Engineering and Mechanical Engineering are represented, however all disciplines are encouraged to participate and help create a sustainable present, and a sustainable future.

*"You have these big topics of concern that can only be addressed by engineers. When you see (young) students interested in taking on these incredibly large and complex issues, you know that these things can get solved. These are the student engineers who are going to fix those problems."*  
-Jason Salseg

## Second Generation Scientist



Robin Ka'ai with daughter Riley Ka'ai

Second grader Riley Ka'ai, daughter of STEM Program alumnus Robin Ka'ai, presented her science project at the 6th Annual Honolulu District Science Fair on the campus of Kapi'olani Community College. She focused on the effect weight has on the distance objects are thrown using a catapult. This event is a partnership between Honolulu District Schools and Kapi'olani CC.

*"She's presenting in the same cafeteria her dad presented in numerous times... just twenty years earlier than I did"*

- Robin Ka'ai

**ERN** (cont'd from page 1)

a Hexapodal Locomotion Robot" (Faculty advisor: Dr. Aaron Hanai). Also selected to attend was Jennifer Wong-Ala for her research on the effects of Agriculture on the nutrient cycle of streams (Faculty advisor: Dr. Aaron Stoler). Congratulations to all of our hard working students and their dedicated advisors.



*"I had a great time at the ERN conference. The keynote speakers not only talked about their work, but also their backgrounds and struggles that they endured to get to where they are today. Getting the opportunity to attend a conference in Washington D.C. was a great experience. It's an area that is full of history, the museums are amazing, and it's just beautiful during the wintertime."*

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-Jennifer Wong-Ala

**Olonā** (cont'd from page 1)

māmaki (*Pipturus albidus*), and 'ala'alawai nui (*Peperomia tetraphylla*) grown in soil and hydroponics. This data will be analyzed to determine whether soil or hydroponics is more feasible for cultivation of these species. Furthermore, several of our second-year students traveled to Hilo where they worked with UH Pharmacy school students to investigate methods for isolating and identifying the bioactive compounds found in nioi (*Capsicum frutescens*) and 'uhaloa (*Watheria indica*). Another second-year student continued her work on the chemical properties of pōpolo (*Solanum americanum*). We've also begun a partnership with JABSOM to screen extracts from Hawaiian medicinal plants against various cell lines. Lastly, the project continues to grow, as we will be adding some new plant species and some new students to the roster for the Fall 2015 semester!

**About Us:**

The goal of the STEM Program is to enhance the quality of the science, technology, engineering and mathematics instructional and outreach programs at Kapi'olani Community College as well as to increase the number of STEM students transferring to four-year degree programs as they prepare for careers in the STEM disciplines.

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