



UNIVERSITY  
of HAWAII®  
SYSTEM

March 9, 2017

Senator Ronald Kouchi  
President of the Senate  
State Capitol, Room 409  
Honolulu, HI 96813

Speaker Joseph M. Souki  
Speaker of the House of Representatives  
State Capitol, Room 431  
Honolulu, HI 96813

Pursuant to Section 304A-3007, Hawai'i Revised Statutes, I am transmitting a copy of the 2016 Annual Report of the Research Corporation of the University of Hawai'i.

In accordance with §93-16, Hawai'i Revised Statutes, we have also transmitted a copy of this report to the Legislative Reference Bureau Library.

The public may view an electronic copy of this report on at the following link:  
<http://www.rcuh.com>.

Should you have any questions about this report, please don't hesitate to contact RCUH at 988-8311, or via e-mail at [rcuhed@rcuh.com](mailto:rcuhed@rcuh.com).

Sincerely,

A handwritten signature in black ink that reads "David".

David Lassner

Enclosure

c: Legislative Reference Bureau Library



**RCUH**

**2016 ANNUAL REPORT**



## OUR VISION

*a Hawai'i where research, development, and training flourish and energize a prosperous state economy*

## OUR MISSION

*to support and enhance research, development, and training in Hawai'i, with a focus on the University of Hawai'i*

### RCUH BOARD OF DIRECTORS



**EUGENE BAL III**  
Chair



**DONNA IKEDA**  
Vice-Chair



**DAVID DUFFY**



**KELLI GOODIN**



**MICHAEL MABERRY**



**RANDOLPH MOORE**



**RAYNARD SOON**



**VASSILIS SYRMOS**

## ALOHA

The Research Corporation of the University of Hawai'i's (RCUH) Board of Directors developed a new strategic plan in 2016 that charts the corporation's direction for the next five years. The plan includes new vision and mission statements as well as benchmarks to track progress toward achieving goals that focus on enhancing and expanding the quality of RCUH's services. Since its adoption, foundational work has been undertaken to implement the strategic plan—reviewing and retaining best practices and identifying and adopting innovations that will enable RCUH to provide clients with efficient, responsive, and cutting-edge services. This annual report presents highlights of RCUH's accomplishments during the 2016 calendar year as well as its personnel and financial status for the July 2015–June 2016 fiscal year. Accuity LLP, certified public accountants, found no weaknesses or material findings in its audit of RCUH, and its summary report comprises the last section of this document.

We take great pleasure in using this opportunity to showcase the outstanding research and training conducted by the principal investigators, project staff, and students whose initiatives have advanced scientific knowledge and Hawai'i's economy. Their investigations enrich our understanding of outer space; the ecology of oceans; and the complex issues that confront contemporary society, such as climate change, homelessness, and environmental degradation. RCUH is proud to support the full range of such

important work and is devoted to helping our clients be more productive in achieving the results that, in the end, benefit us all.

We also take this opportunity to acknowledge and say *mahalo* to the RCUH core staff who provide the support services with dedication and grace to thousands of projects and individuals throughout Hawai'i and elsewhere. They are the enablers, in the best sense of that word. To learn more about RCUH, please visit our website at [www.rcuh.com](http://www.rcuh.com).



**EUGENE BAL III, CHAIR**  
Board of Directors



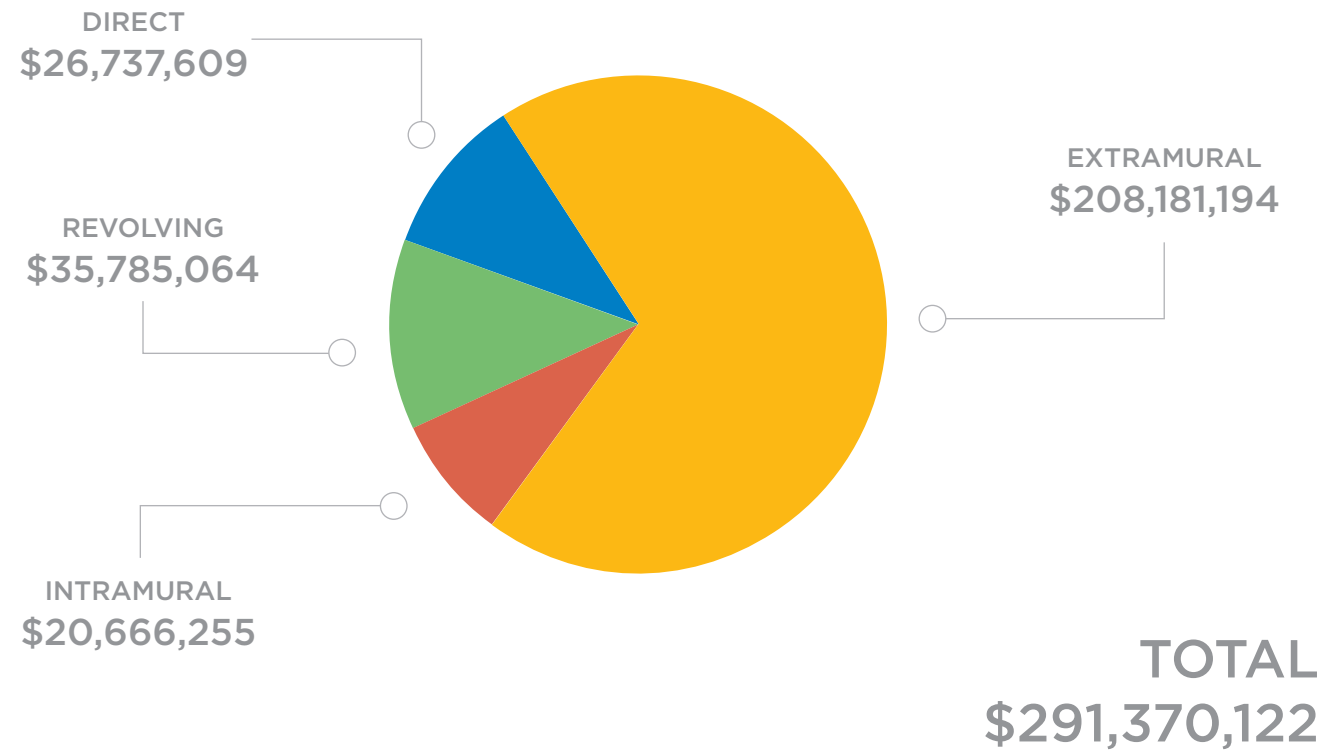
**SYLVIA YUEN, PH.D.**  
Executive Director

*Cover photos are from the Recompression (Hyperbaric) Treatment Facility, Papahānaumokuākea Marine National Monument, and O'ahu Army Natural Resources projects.*

*RCUH is an equal employment opportunity/affirmative action employer. It is our policy to recruit and advance in employment qualified applicants and employees without regard to race, color, religion, sex, national origin, disability status, protected veteran status, or any other characteristic protected by law.*

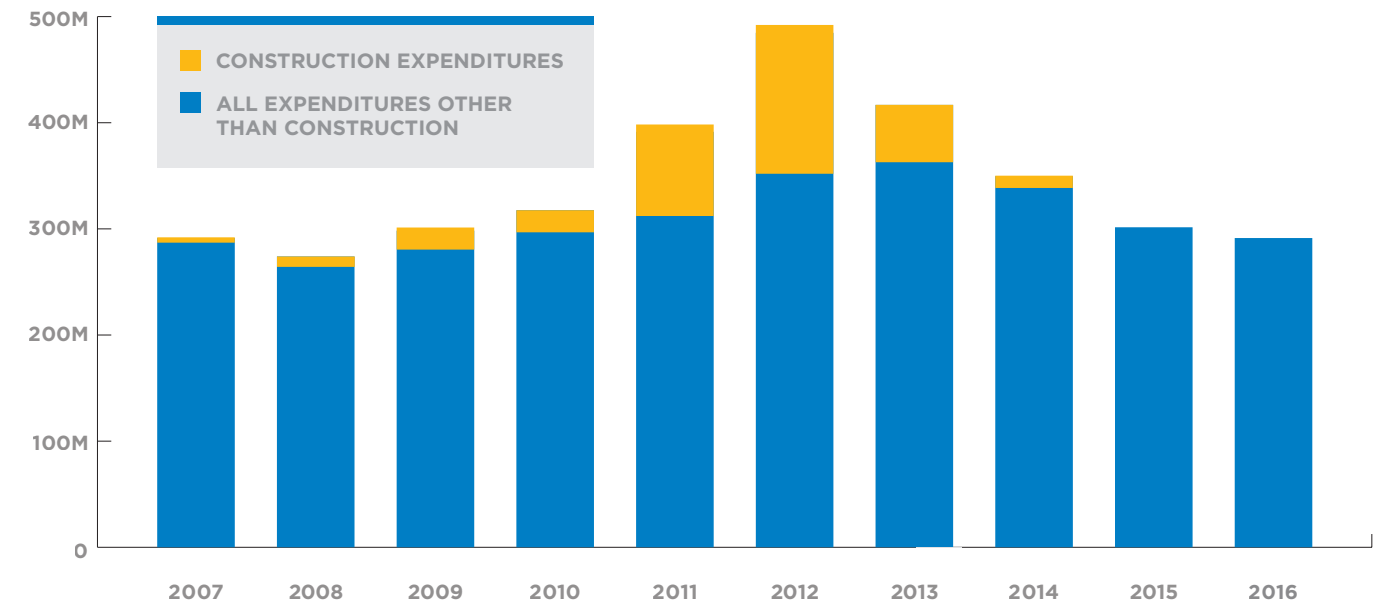
# FINANCIAL SUMMARY

## VOLUME OF BUSINESS BY TYPE OF PROJECT



- UH Extramural projects: Externally sponsored federal and non-federal contracts, grants, and other agreements.
- UH Intramural projects: Internally sponsored programs or activities funded with UH Research and Training Revolving Funds (RTRF) or Tuition and Fee Special Funds (TFSF).
- UH Revolving projects: Self-sustaining, income-generating projects established to support a specialized service activity, a recharge center, or other sales and service activities.
- Direct projects: Projects assigned to and accepted by RCUH from non-UH organizations, including federal and state agencies, international organizations, and other not-for-profit organizations.

## VOLUME OF BUSINESS 2007-2016



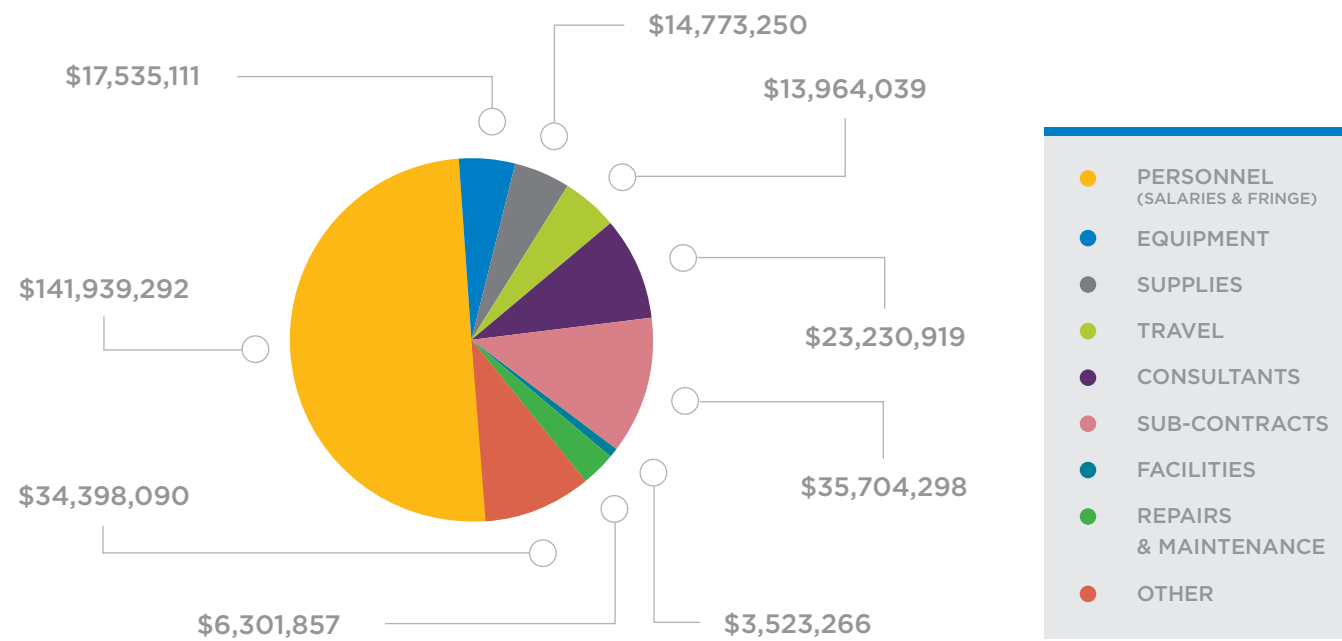
University of Hawai'i extramural contracts and grants have a substantial impact on RCUH's volume of business. The University's awards reached a peak in 2011, which was reflected in RCUH's increased project expenditures from 2011 to 2013. As indicated in the above chart, when expenditures for construction are removed, the magnitude of the fluctuation in business volume over the past several years is greatly reduced.

## PROJECTS BY COUNTY

COUNTY	NO. PROJECTS	NO. EMPLOYEES	VOLUME OF BUSINESS
HAWAI'I	327	742	\$39,789,119
HONOLULU	6,063	1,632	\$224,894,211
KAUA'I	28	98	\$1,767,852
MAUI	147	272	\$24,918,940
OTHER (Continental U.S. + non-U.S.)		91	
<b>TOTAL</b>	<b>6,565</b>	<b>2,835</b>	<b>\$291,370,122</b>

RCUH is one of the state's largest employers. During the fiscal year RCUH hired over 1,500 employees and conducted nearly 700 recruitments. RCUH employed over 2,800 employees in FY 2015-2016, with 96.8% of these employees working and residing in the state of Hawai'i and the remaining 3.2% in the continental U.S. and foreign countries. There are RCUH employees living and working on all of the major Hawaiian islands, and their employment contributes to the vitality and economy of their communities and the state.

## FINANCIAL EXPENDITURES



In FY 2015-2016, the total financial payment for various goods and services was \$291,370,122.

## HUMAN RESOURCES SUMMARY

### PAYROLL AND PERSONNEL TRANSACTIONS

PAYROLL	NUMBER
TOTAL EMPLOYEES	2,835
SALARIES AND WAGES	\$112,853,336
FRINGE BENEFITS	\$29,085,956

PERSONNEL TRANSACTIONS	NUMBER
HIRES	1,539
TERMINATIONS	1,687
W-2s ISSUED	3,749

The employment of RCUH project personnel is dependent on the grants, contracts, and agreements under which they were hired. These generally have durations ranging from several months to several years. The large numbers of hires and terminations reflect the high employee turnover as funds for projects are received and end at various times of the year.

## FRINGE BENEFITS RESERVES

During the past year, new or revised practices with significant impact on RCUH employees were instituted to update systems or to meet new federal regulations. For example, on July 1, 2015, RCUH Human Resources implemented a Vacation Payout Reserve, an Unused Sick Leave Partial Payout Reserve, and an Unemployment Insurance Reserve. These three fringe benefits reserves were pursuant to compliance requirements specified in the 2 CFR Chapter II, Part 200, Subpart E, 200.431 - Compensation - Fringe Benefits (part of the Uniform Administrative Requirements, Cost Principles and Audit Requirement for Federal Awards). They also lessen the administrative burden on PIs and

fiscal administrators. The process of creating these reserves included having the University of Hawai'i's cognizant agency, the U.S. Department of Health & Human Services (DHHS), review and approve the applicable fringe benefit rate for each reserve. This process also included updating the RCUH Vacation Policy and the RCUH Disclosure Statement (DS-2). The RCUH Disclosure Statement is a compliance requirement of 48 CFR 9903.202 of the Cost Accounting Standards Board (CASB) and is part of the University of Hawai'i's CASB Disclosure Statement, which is required by Public Law 100-679 for Educational Institutions.

## NEW INITIATIVES

### STRATEGIC PLAN

The RCUH Board of Directors devoted the greater part of 2016 to developing a new strategic plan to replace the former 2004 plan. The inside front cover of this report contains new vision and mission statements which will direct RCUH's programs and activities for the next five years. The new plan serves as the basis of a living document which will be reviewed annually and which contains quantitative benchmarks to monitor the progress toward achievement of the following six goals:



- Enhance operations and services to improve quality services;
- Enhance the ability of core and project staff to provide effective service to research, development, and training projects;
- Improve and expand communications at all levels;
- Expand services to non-UH research, development, and training projects;
- Serve as convener to highlight issues of importance to research, development, and training in Hawai'i and the Pacific region; and
- Secure resources to ensure financial security and quality services.

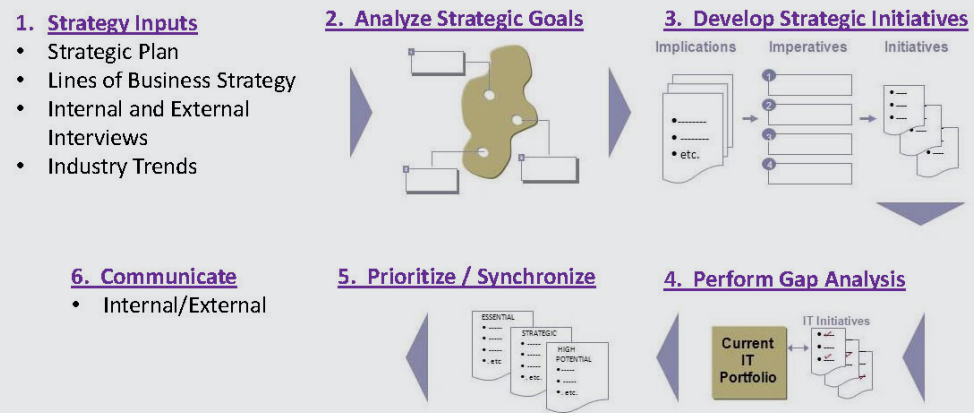


## IT ROADMAP

In the past, the IT systems for RCUH's Human Resources and Finance Departments operated independently of one another. The new IT Roadmap aligns with the RCUH Strategic Plan and provides greater depth and detail regarding how RCUH will move forward in the electronic space. The development of the roadmap brought together and integrated the work of RCUH's

departments, staff, and IT contractors. It required new organizational structures and revisions in system development and internal procedures. Although some of the changes were not easy, an integrated system brings value that surpasses the return of stand-alone systems.

### IT Strategic Planning Process



## CORPORATE SERVICES DEPARTMENT



The Corporate Services Department was established to engender efficiency and eliminate duplication in responsibilities that were formerly undertaken by RCUH's two other departments, Human Resources and Finance. It was also established to bring greater focus on current and new initiatives that represent RCUH as a whole. The new department is ably served by director Brenda Kanno and specialists Gayle Hamasaki and Wendy Chang.

## WEBSITE

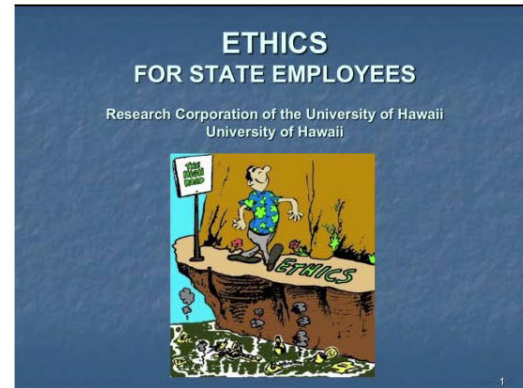
Although serviceable, RCUH's previous website did not utilize the latest technology tools, contain updated information, or present contemporary images. These shortcomings and more have been overcome with the development of a new website, which can be viewed at [www.rcuh.com](http://www.rcuh.com). Visitors to the new website are now able to:

- more easily and quickly find desired information,
- view videos of RCUH's outstanding employees,
- participate in and evaluate online training, and
- experience consistent log-in screens for the Finance and Human Resources systems.

## ONLINE TRAINING

RCUH's employees are located on all of the major Hawaiian Islands, the continental U.S., and some foreign countries. To ensure equal access to training designed to enhance knowledge and quality performance, RCUH is committed to developing a robust online training program

which will be available on its website. This will be especially beneficial to individuals who are geographically dispersed, are not located on the UH Mānoa campus, and find it difficult to attend in-person trainings.



## AWARDS AND HONORS

### EMPLOYEES

RCUH conducts an annual recognition program to honor exemplary employees nominated for their “demonstrable, significant, and outstanding” performance. The following individuals were selected as the 2015 awardees in their respective categories and recognized at the RCUH awards luncheon in March 2016. The first-place honorees were each presented with \$1,000 and a certificate of congratulations, while each second-place honoree received \$500 and a congratulatory certificate.

### OUTSTANDING RESEARCHER/MANAGER PROFESSIONAL STAFF



**1st Place: Timothy Williams**

**Project: LEONIDAS**

The LEONIDAS program was established in 2007 to design, build, test, launch, and operate small orbital satellites from the Pacific Missile Range Facility (PMRF) on the island of Kaua'i. A rail launcher weighing 210,000 pounds and measuring 130 feet in length was built—the largest of its kind in the world and entirely the brainchild of Mr. Williams. He presided over the construction of a new launch pad at PMRF, meeting the rigorous standards of the U.S. Navy and Air Force, utilizing 400 cubic yards of concrete and a supplemental 20 tons of rebar. Because of his outstanding efforts, Hawai'i is now a space-faring state.

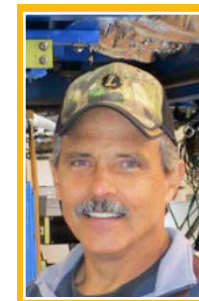


**2nd Place: Rebecca Briggs**

**Project: SOEST Laboratory for Analytical Biogeochemistry**

The School of Ocean & Earth Science & Technology (SOEST) Laboratory for Analytical Biogeochemistry (S-Lab) must be financially self-sufficient and be able to cover its operating costs, including salaries. Dr. Briggs worked tirelessly to grow the S-Lab's client base; under her leadership, the S-Lab has experienced an eight-fold increase in clientele since it became operational in 2012 and is now a self-sustaining laboratory.

### OUTSTANDING PROJECT SUPPORT STAFF



**1st Place: Paul Berrios**

**Project: NASA Infrared Telescope Facility**

Mr. Berrios demonstrates extraordinary competence and leadership. He contributed in significant ways to the efficiency of the HVAC system at the NASA Infrared Telescope Facility by working closely with the contractor to find the best ways to complete work in a cooperative and timely manner. He also corrected longstanding mechanical problems with the astronomy observatory dome and shutter, resulting in a reliability not seen since the observatory was first operational.



**2nd Place: Lisa Sato and Noelle Long**

**Project: Animal and Veterinary Services**

Ms. Sato and Ms. Long are the unsung heroes of the Animal and Veterinary Services (AVS), making possible the effortless daily operations at the biomedical and neuro-behavioral vivaria. They have dedicated years to improving overall quality and efficiency at AVS so that UH personnel can continue to make important contributions to scientific knowledge and advance cures for diseases. Their attention to detail, ability to coach others, and willingness to volunteer for assignments above and beyond the scope of their duties are just a few of the many praiseworthy qualities they routinely exhibit in their performance.

“ Ms. Sato and Ms. Long are the unsung heroes of the Animal and Veterinary Services. ”

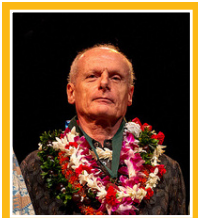


## UH FACULTY

The Regents' Medal for Excellence in Research is awarded by the UH Board of Regents in recognition of scholarly contributions that expand the boundaries of knowledge and enrich the lives of students and the community. RCUH provided \$5,000 to each of the following recipients of this prestigious award to support his or her research.



*Brian Bowen, a research professor at the Hawai'i Institute of Marine Biology (HIMB) in the School of Ocean and Earth Science and Technology, has made outstanding contributions to the conservation of marine species such as sea turtles, shrimp, sturgeon, and white sharks. He has trained 23 graduate students and sits on the committees of another 14. He has published some 200 peer-reviewed publications, given 90-plus presentations, and garnered more than \$6 million in grants.*



*Loïc Le Marchand is a nationally and internationally recognized professor of Epidemiology at the UH Cancer Center, one of the first epidemiologists to study the role of genes and the environment in cancer. A member of the 2015 International Agency for Research in Cancer committee that identified processed meat as a carcinogen, he was recognized as one of the 2015 Thomson Reuters' "World's Most Influential Scientific Minds and Highly Cited Researchers."*



*Kristin Pauker is an assistant professor in the College of Social Sciences' Department of Psychology. Using cutting-edge methodology, she is making significant contributions to developmental and social psychology in the areas of intergroup attitudes, racial bias, interracial anxiety, and essentialist beliefs, particularly the timely and important topic of racial prejudice. Since joining UH Manoa in 2011, she has published 12 peer-reviewed journal articles and a book chapter, with 4 manuscripts currently under review.*

## UH STUDENTS

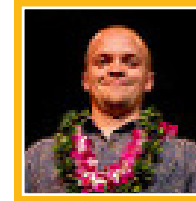
To encourage the scholarly endeavors of promising young scientists, RCUH recognized the UH Mānoa Student Excellence in Research awardees. Three graduate students whose investigations have won praise and recognition received a \$500 award and a certificate of congratulations from RCUH.



*Megan Ansdell, having earned distinction at well-known institutions abroad, returned to Hawai'i to pursue a doctorate in astrophysics at the Institute for Astronomy. She has published four first-authored, refereed papers on her research in formation of planetary systems and made a groundbreaking survey of the Lupus cluster, one of the youngest nearby clusters undergoing active star formation, with the new ALMA telescope array.*



*Keisha Bahr's PhD research at the Hawai'i Institute of Marine Biology focuses on identifying species- and community-level responses to the local and broader impacts of climate change on the estuarine coral reef ecosystem of Kāne'ohe Bay, in particular coral bleaching. She published her dissertation in its entirety prior to her defense, and her awards include "Best Graduate Poster" at the UH Albert Tester symposium.*



*One of the top PhD students in the Department of Electrical Engineering, Ryan Gough has gained international recognition amongst scholars investigating microwaves. He was the 2014 ARCS Scholar of the Year for achievement in the sciences at the University, the first UH engineering student to win the award. His fundamental advancements in the area of dynamically reconfigurable circuits and antennas using liquid metals led the nation's foremost expert to fly to Honolulu for Dr. Gough's dissertation defense.*

## IMPACT OF RCUH PROJECTS

RCUH provides the financial, human resources, and other support services to projects that expand the boundaries of knowledge and/or utilize creative ways to apply research findings in real-world situations. As can be seen from the examples below, important work is being conducted across many disciplines in a variety of settings. These projects all contribute to people's increased understanding of their world and the improvement in their quality of life.



### **O'ahu Army Natural Resources Project: Philip Taylor, PI**

*This project protects a variety of creatures, including the O'ahu elepaio, an inquisitive flycatcher. Yearly monitoring of breeding activity and ongoing active protection from invasive rodents have resulted in a population increase of the O'ahu elepaio, which is a federally endangered forest bird.*



### **JIMAR Sustaining Healthy Coastal Ecosystems: Mark Merrifield, PI**

*This project leads an integrated multi-partner and interdisciplinary program of ecosystem assessment and long-term monitoring, benthic habitat mapping, and applied research on the coral reef ecosystems of 40 primary islands and atolls in the Hawaiian Archipelago, the Mariana Archipelago, American Samoa, and the Pacific Remote Island Areas. It also develops capacity and provides scientific expertise and technical partnerships to governments and key partners in these regions to inform and support the effective management of coral reef ecosystems and sustainable fisheries. The photo shows the 14,606 kg of marine debris removed from the shorelines of the Midway Atoll National Wildlife Refuge.*





**Subaru Telescope, National Astronomical Observatory of Japan: Nobuo Arimoto, PI**

*The highly advanced Subaru Telescope, an 8.2-meter optical-infrared telescope on Mauna Kea, has state-of-the-art digital imagers and spectrographs. Open-use observation is provided to astronomers in Japan, at UH, and elsewhere in the world. Many of this project's approximately 100 employees were born or raised in Hawai'i, and the majority possess engineering or technical expertise.*



**Learning to Grow: Ardis Eschenberg, PI, and Mary Ann Nemoto, co-PI**

*This statewide educational outreach project supports low-income families receiving child-care subsidies and care providers who provide home-based care to children from birth to 5 years of age. It promotes quality child care and school readiness by disseminating educational materials on children's healthy development and learning activities to 2,200 homes each month. In addition, training publications are produced and presentations conducted to enhance the work of the early childhood community.*



**Children's Healthy Living Program: Rachel Novotny, PI**

*The Children's Healthy Living Program for Remote Underserved Minority Populations in the Pacific Region (CHL) is a partnership among remote Pacific states and other jurisdictions of the U.S.: Alaska, American Samoa, Commonwealth of the Northern Mariana Islands, Federated States of Micronesia, Guam, Hawai'i, the Republic of the Marshall Islands, and the Republic of Palau. Funded by a \$25 million grant from the U.S. Department of Agriculture, the project aims to improve the health and nutrition of children living in these areas.*



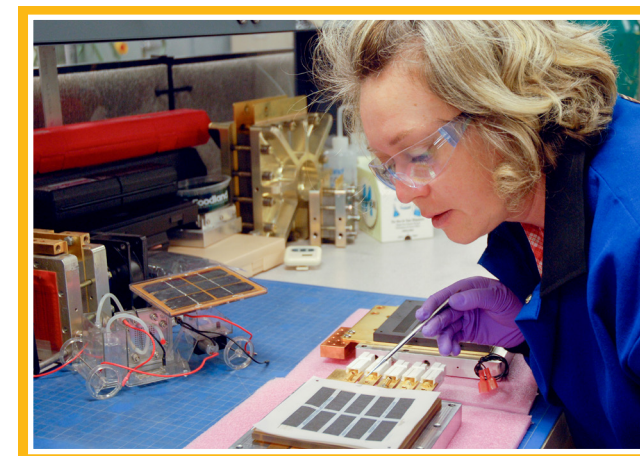
**Laysan Albatross Egg Swap at Pacific Missile Range Facility: David Duffy, PI**

*The Laysan albatross returns each year to nest at Kaua'i's Pacific Missile Range Facility, creating a significant bird airstrike hazard for the birds as well as for pilots. To decrease the albatross population at this site, eggs are taken from active nests and swapped with inviable eggs. The fertile eggs are provided to the Laysan albatross rearing project on O'ahu, where biologists are attempting to establish a nesting population of the birds.*



**Papahānaumokuākeā Marine National Monument (PMNM): Lisa Parr, PI**

*Diving-intensive cruises utilizing scientific divers trained in survey techniques are conducted annually to assess marine life abundance. The UH Marine Option Program conducts the Quantitative Underwater Ecological Surveying Techniques (QUEST) program, which trains SCUBA divers in reef-surveying techniques. This creates a pool of well-trained divers who can be drawn upon to support work on reef assessment and monitoring.*



**Determination of Oxygen and Hydrogen Mass Transfer Coefficients in PEMFC GDE and Their Separation into Gas and Electrolyte Contributions: Tatyana V. Reshetenko, PI**

*Fuel cells are the most promising clean-energy solution, offering electricity through the reaction of hydrogen and oxygen and, because they produce no emissions other than water, reducing overall greenhouse gas production. Since ambient air is the most economical and convenient oxidant, fuel cell performance is limited by the finite transport rates of reactants and products. A better understanding of transport limitations is necessary to increase the performance of fuel cells, improve their design, reduce their size in applications with volume restrictions, and reduce production costs.*



**Report of Independent Auditors**

To the Board of Directors of  
The Research Corporation of the University of Hawai'i

We have audited, in accordance with auditing standards generally accepted in the United States of America and the standards applicable to financial audits contained in *Government Auditing Standards*, issued by the Comptroller General of the United States, the statements of net position of The Research Corporation of the University of Hawai'i, State of Hawai'i as of and for the years ended June 30, 2016 and 2015, and the related statements of revenues, expenses and changes in net position, and cash flows for the years then ended (not presented herein); and in our report dated October 27, 2016, we expressed an unmodified opinion on those financial statements.

In our opinion, the information set forth in the accompanying condensed financial statements is fairly stated, in all material respects, in relation to the financial statements from which it has been derived.

*Acuity* LLP

Honolulu, Hawai'i  
October 27, 2016

**The Research Corporation of the University of Hawai'i  
State of Hawai'i  
Condensed Statements of Net Position  
June 30, 2016 and 2015**

	<b>2016</b>	<b>2015</b>
Current assets	\$ 45,102,246	\$ 43,635,909
Capital assets	2,020,615	1,756,861
Total assets	<u>\$ 47,122,861</u>	<u>\$ 45,392,770</u>
Current liabilities	\$ 31,847,054	\$ 30,465,391
Noncurrent liabilities	4,664,562	4,532,676
Total liabilities	<u>36,511,616</u>	<u>34,998,067</u>
Net position		
Invested in capital assets	2,020,615	1,756,861
Unrestricted	8,590,630	8,637,842
Total net position	<u>10,611,245</u>	<u>10,394,703</u>
Total liabilities and net position	<u>\$ 47,122,861</u>	<u>\$ 45,392,770</u>



**The Research Corporation of the University of Hawai'i  
State of Hawai'i  
Condensed Statements of Revenues, Expenses and Changes in Net Position  
Years Ended June 30, 2016 and 2015**

	2016	2015
<b>Operating revenues</b>		
University of Hawai'i	\$ 5,864,638	\$ 5,521,842
Other sponsor agencies	874,862	986,309
Total operating revenues	<u>6,739,500</u>	<u>6,508,151</u>
<b>Operating expenses</b>		
Personnel costs	3,662,249	3,679,587
Data processing services	1,123,074	707,368
Office supplies and services	372,268	440,890
Insurance	352,890	330,225
Depreciation	319,230	215,761
Office and equipment rental	226,964	234,615
Project development	207,435	213,292
Retiree medical benefits	-	2,000
Other expenses	365,372	308,831
Total operating expenses	<u>6,629,482</u>	<u>6,132,569</u>
Operating income	<u>110,018</u>	<u>375,582</u>
<b>Nonoperating revenues (expenses)</b>		
Intergovernmental (Federal awards)		
Revenue	11,002	167,319
Expense	(11,002)	(167,319)
Interest income	106,524	90,825
Income before special and extraordinary item	<u>216,542</u>	<u>466,407</u>
<b>Special and extraordinary item</b>		
Funding support to University of Hawai'i	-	(250,000)
Increase in net position	<u>216,542</u>	<u>216,407</u>
<b>Net position</b>		
Beginning of year	10,394,703	10,178,296
Ending of year	<u>\$ 10,611,245</u>	<u>\$ 10,394,703</u>

**The Research Corporation of the University of Hawai'i  
State of Hawai'i  
Condensed Statements of Cash Flows  
Years Ended June 30, 2016 and 2015**

	2016	2015
<b>Operating activities</b>		
Cash received from operations	\$ 6,499,052	\$ 4,880,565
Cash payments for operations	(6,044,241)	(5,341,438)
Project expenditures and reimbursements, net	(4,792,633)	(5,013,258)
Net cash used in operating activities	<u>(4,337,822)</u>	<u>(5,474,131)</u>
<b>Financing activities</b>		
Noncapital	-	(250,000)
Capital	(582,984)	(702,151)
Net cash used in financing activities	<u>(582,984)</u>	<u>(952,151)</u>
<b>Investing activities</b>	<u>(2,896,015)</u>	<u>89,137</u>
Decrease in cash	<u>(7,816,821)</u>	<u>(6,337,145)</u>
<b>Cash</b>		
Beginning of year	<u>30,973,424</u>	<u>37,310,569</u>
Ending of year	<u>\$ 23,156,603</u>	<u>\$ 30,973,424</u>



**Research Corporation  
of the University of Hawai'i**

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