DIVERSITY HEALTH KNOWLEDGE

Ho‘ōla Manamana

UNIVERSITY OF HAWAI‘I CANCER CENTER
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The University of Hawai‘i Cancer Center reached several milestones this past year that highlight our commitment to serving the people of Hawai‘i and the Pacific and our mission to reduce the burden of cancer. Importantly, the Center’s National Cancer Institute (NCI) designation was renewed. Continually certified as an NCI Center since 1996, this designation emphasizes the depth and quality of research, the contributions to education of students, and the exemplary work in community outreach that is directed by our outstanding faculty. Indeed, the NCI rated the Center’s efforts in community outreach and engagement as “exceptional”, the highest ranking possible.

A second milestone was the 25th anniversary of the Multiethnic Cohort (MEC) Study, the largest, most ethnically diverse epidemiologic cohort study in the United States. The MEC Study has involved over 100,000 people in Hawai‘i and has led to over 600 peer-reviewed manuscript publications. The celebration event was attended by numerous MEC participants, their family members and friends, and many of the UH Cancer Center faculty and staff.

Several examples of research innovation are highlighted in this annual report that span from population-based studies in cancer control such as Dr. Pallav Pokhrel’s studies on e-cigarettes in youth to novel clinical trials directed by Drs. Jared Acoba and Jamie Fukui to basic laboratory investigations such as those by Dr. Muller Fabbri. These, and others represented in this report, are just a few examples of the unique research conducted by UH Cancer Center faculty that, both directly and indirectly, benefits the people of Hawai‘i and others throughout the Pacific.

It is a great privilege to have the opportunity to lead this great cancer center and its talented faculty toward new discovery and clinical translation, and to contribute to a deeper understanding of cancer mechanisms, cancer disparities and cancer prevention and treatments.

Mahalo!

Randall F. Holcombe, MD, MBA
Director
The University of Hawai'i Cancer Center successfully competed for renewal of National Cancer Institute (NCI) designation in 2018, and was awarded a more than $8 million Cancer Center Support Grant to fund research at the Center. Of more than 1,000 cancer centers across the country, the UH Cancer Center is one of only 71 NCI-designated cancer centers in the nation.

The UH Cancer Center was established by the University of Hawai'i, Mānoa in 1981 and achieved NCI-designation and funding in 1996, an honor it has held continuously since that time. NCI-Designated Cancer Centers must go through rigorous and competitive renewal of their status every three to five years.

The designation has helped Cancer Center researchers make seminal advances into the understanding of the molecular basis for cancer, the identification of disparities in cancer incidence and mortality within our diverse population, engagement of the community in cancer prevention initiatives and coordination of clinical trials for cancer patients through the UH Cancer Center clinical trials network that includes the Hawai‘i Cancer Consortium.

“I am extremely pleased that the National Cancer Institute has recognized the unique contributions of the University of Hawai‘i Cancer Center, and rewarded the efforts of the incredible faculty by continuing the NCI designation. For Hawai‘i, this means that our family and friends have access to cutting-edge cancer treatments and the highest quality of cancer care.”

- RANDALL HOLCOMBE
DIRECTOR, UH CANCER CENTER

The designation helps Cancer Center members bring in around $40 million per year in grants from the National Institutes of Health and other agencies to support research activities. This funding provides nearly $90 million in economic impact for the Island of O‘ahu every year.
The people of Hawai‘i are the greatest beneficiaries of NCI designation, which brings research directed toward the cancer problems specific for our diverse ethnic population and access to the most up-to-date approaches for cancer prevention and treatment.

– DAVID Y. IGE, HAWAI‘I GOVERNOR

The UH Cancer Center keeps treatment in reach for many people in our state. It is also the only institution in the country researching cancer health disparities in the Native Hawaiian and Asian American communities.

– BRIAN SCHATZ, U.S. SENATOR

The UH Cancer Center continues to serve as a national leader in research, prevention, and education efforts, especially on how cancer affects Asian American, Native Hawaiian, and Pacific Islander populations.

– MAZIE HIRONO, U.S. SENATOR

The University of Hawai‘i is delighted to have the National Cancer Institute renew our designation as an NCI Cancer Center. This provides well-deserved external validation and national recognition of the important work we are doing and our path forward.

– DAVID LASSNER, UH PRESIDENT & UH MĀNOA INTERIM CHANCELLOR
John Shepherd, PhD, uses innovative technology in an effort to improve the accuracy of cancer screening and body composition measuring.

“Studies have shown that up to 60 percent of women screened with mammography over 10 years have at least one abnormal result, even though no breast cancer is present,” said Shepherd.

Shepherd’s three compartment breast (3CB) imaging technique has the potential to notably improve breast cancer screening. 3CB imaging can potentially rule out 36 percent of suspicious findings in standard mammograms without invasive biopsies.

As an expert consultant for a component of the National Health and Nutrition Examination Survey study for 20 years, Shepherd also researches 3D optical and dual-energy X-ray absorptiometry scanning. More specifically, he looks at how the scans can be used to accurately measure the muscle and fat composition within a person to help identify health risk and nutrition motivation trends.
Melissa Merritt, PhD, evaluates risk factors for women’s cancers with a focus on gynecologic (ovarian and endometrial) cancers. She developed a personal interest to investigate ovarian cancer when her grandmother was diagnosed with the disease. Merritt’s research goals are to improve the health of women diagnosed with gynecologic cancers by developing prevention strategies and identifying modifiable lifestyle factors that may influence survival following a cancer diagnosis.

In her recent study, Merritt and colleagues discovered that women with ovarian cancer who took aspirin or non-steroidal anti-inflammatory drugs after their diagnoses, had an improved prognosis. This finding provides a new opportunity to improve survival for women who are often faced with a challenging course of treatment.

“I believe that the research I do is very important and has the possibility to have a positive impact on people’s lives. This keeps me motivated through the ups and downs of the research process.”

- MELISSA MERRITT
“I was drawn to Hawai’i because of its ethnic diversity and the abundance of natural products that fuels my research interests.”

– MULLER FABBRI

Muller Fabbri, MD, PhD, focuses his research on interrupting the communication between cancer cells and the tumor microenvironment in order to block cancer growth and the development of resistance to treatments.

Fabbri found a key molecule that is able to kill cancer cells in the most aggressive form of neuroblastoma. The study represents the first evidence that microRNA (miR-186), in natural killer cell-derived exosomes, can kill cancer cells as effectively as natural killer cells themselves. The microRNA kills cancer cells by inhibiting some key genes that promote cancer growth and helping natural killer cells become insensitive to paralysis.

“The discovery has been made in the most common solid pediatric cancer developing outside of the skull, however there is hope that these findings are applicable to several other types of human cancers, given the central role played by natural killer cells in anti-cancer immunity,” said Fabbri.
Michelle L. Matter, PhD, focuses her research on cancer metastasis. She studies ways to inhibit and understand how cells survive as they move throughout the body and develop new tumors at secondary sites. Matter describes her most exciting research discovery as the identification of a gene, PTRH2, that blocks cell death. PTRH2 plays a role in human development and in cancer. In humans, loss of the gene causes muscle disease and deafness. In cancer patients, high levels of PTRH2 correlate with poor prognosis, increased metastasis and low overall survival.

Matter said she is motivated to, “translate the findings in my lab into patient treatments. Understanding at the molecular level what drives cancer cells to metastasize will allow us to develop new therapeutics to block metastasis and ultimately save lives.”
The University of Hawai‘i Cancer Center proudly celebrated the 25th anniversary of the Multiethnic Cohort (MEC) Study. The MEC Study is the most ethnically diverse epidemiologic study in the world that investigates the roles of lifestyle, diet and genetics in cancer and other chronic diseases.

“The MEC Study is being conducted to understand the differences in risk that exist for cancer and other chronic diseases among the main ethnic/racial groups living in Hawai‘i and California,” said Loic Le Marchand, MD, PhD, UH Cancer Center epidemiologist and principal investigator of the study.

The MEC Study, which started in 1993, follows a group of individuals over time to see how the members, who develop cancer or other conditions, differed in various risk factors several years before diagnosis. At the start of the study, over 215,000 Hawai‘i and Los Angeles residents, aged 45 to 75, were recruited and completed a 26-page questionnaire about their dietary habits and lifestyle, as well as their medical history. Participants’ information is updated through follow-up questionnaires sent every five years. The cohort is comprised of men and women primarily of Japanese, Native Hawaiian, African American, Latino and Caucasian origin.

“After all these years, over 70 percent of all cohort members still fill out their questionnaires, demonstrating the participants’ exceptionally high level of commitment to the study.”

– LOIC LE MARCHAND
Since its inception in 1993, the MEC Study has been funded by the National Cancer Institute and is jointly conducted by the UH Cancer Center and the Keck School of Medicine at the University of Southern California (USC) in Los Angeles. Its data has resulted in more than 600 published scientific articles.

“For 25 years now the MEC Study has continued to fulfill its mission to make a significant contribution to the goal of correcting cancer health disparities and preventing cancer and other chronic diseases in all populations,” said Randall Holcombe, MD, MBA, UH Cancer Center director. “We are proud to lead a study with such significant impact at the UH Cancer Center. The MEC Study has gained national and international recognition among biomedical scientists, and is an example of the world-class research conducted at the University of Hawai’i.”

“Dozens of investigators and close to a hundred trainees have used MEC Study data and samples for their research.”

– Lynne Wilkens, DrPH, Co-Principal Investigator
“The FDA recently addressed the alarming epidemic of youth e-cigarette use by creating historic enforcement actions on e-cigarette marketing. Receiving the competitive federal grant is a recognition of the University of Hawai‘i’s leadership on this national problem.”

- RAN D ALL HOLCOMBE, UH CANCER CENTER DIRECTOR

Pallav Pokhrel, PhD, focuses his research on reducing tobacco-related cancer disparities and preventing abuse of new and emerging tobacco products such as e-cigarettes.

AWARDED $1.4M FOR E-CIGARETTE RESEARCH

The National Cancer Institute and the U.S. Food and Drug Administration awarded a three-year $1.4 million grant for e-cigarette research to Pokhrel. Pokhrel and his team will examine how marketing spreads e-cigarette knowledge, attitudes and behavior through young adult networks.

“E-cigarettes are currently poorly regulated, and e-cigarette use is increasingly prevalent among youth and young adults between the ages of 18– and 25-years-old,” said Pokhrel. “Currently the public health consequences of e-cigarette use are largely unknown. This new study aims to generate knowledge that will help develop tobacco control policies and interventions that would promote the health of young adults in Hawai‘i and across the nation.”

The research will also help identify vulnerable groups of young adults who develop nicotine addiction as a result of targeted e-cigarette marketing, and will highlight how e-cigarette use spreads among this age group as a result of marketing.
A primary research focus of, **Brenda Hernandez, PhD, MPH,** is the role of infection in cancer development and progression. Hernandez and her team have made important contributions to understanding the human papilloma virus (HPV) infection.

“We showed that HPV is a very common and ubiquitous infection in healthy males and females and is readily transmitted between sexual partners,” said Hernandez.

Hernandez and her research team have investigated the role of HPV in the development of genital, and head and neck cancers. They have also established that HPV plays a role in nearly all anal cancers, and is driving the increasing rates of oropharyngeal cancers.

Hernandez also directs the UH Cancer Center’s Hawai‘i Tumor Registry (HTR) which ranks as one of the oldest cancer registries in the nation. She credits the HTR for its critical role in cancer control and research efforts in the state, including understanding the basis for disparities in cancer risk and outcomes across Hawai‘i’s multiethnic population.

“Our research underscores the importance of HPV vaccination for the prevention of cancers caused by the virus.”

- **BRENTA HERNANDEZ**
The UH Cancer Center’s Hawai’i Tumor Registry (HTR) was awarded $1.8 million from the National Cancer Institute (NCI) to continue to participate in the NCI’s Surveillance, Epidemiology and End Results (SEER) Program. The HTR has provided incidence and survival data on all cases of cancer in Hawai’i since 1973. The award includes a potential of additional nine years of funding for a total award of more than $21 million.

As one of only 16 newly funded NCI-SEER regions nationwide, the HTR jointly operated by the UH Cancer Center and the Hawai’i State Department of Health collects detailed information on the more than 7,000 new cases of cancer diagnosed in Hawai’i residents annually, as well as follow-up and survival data. The confidential database of information on all reportable cases of cancer is published to inform local prevention and control efforts, as well as national and international research efforts. The HTR’s database contains more cancer cases of Native Hawaiians than any other registry nationwide. It also contains sizable numbers of Chinese, Filipinos, Japanese, Pacific Islanders and Whites, and includes smaller numbers of other ethnic groups. This racially-diverse and unique population resource has been invaluable in demonstrating ethnic variations in cancer incidence and survival.

CANCER STATS

EACH YEAR, ABOUT
6,700 HAWAI’I RESIDENTS
ARE DIAGNOSED WITH CANCER

CANCER IS THE
2ND LEADING CAUSE OF DEATH
IN HAWAI’I RESIDENTS
COMMUNITY CORNER

HAWEI’I COMPREHENSIVE CANCER COALITION

In 2018, Brenda Hernandez, PhD, UH Cancer Center associate researcher, assumed the reigns of chair of the Hawai‘i Comprehensive Cancer Coalition (HCCC) from Shane Morita, MD. As HCCC chair, Hernandez is focused on cancer prevention, community engagement and networking.

The Coalition is dedicated to the implementation of the Hawai‘i State Cancer Plan (2016-2020), which provides a roadmap for reducing cancer disparities in the state. The UH Cancer Center has been a member of the Coalition since 2002.

THE HCCC IS COMPRISED OF OVER 70 CANCER STAKEHOLDERS INCLUDING NON PROFITS, MEDICAL CENTERS, ACADEMIC INSTITUTIONS, AND BUSINESS AND COMMUNITY ORGANIZATIONS AT THE STATE, REGIONAL AND NATIONAL LEVELS.

Top photo: The HCCC honored U.S. Senator Mazie Hirono with the 2018 Courage Award at the annual HCCC Summit at the Hilton Hawaiian Village. Senator Hirono was recognized for her bravery and continued service in Congress while battling Stage IV cancer. Right: The UH Cancer Center team at the Making Strides Against Breast Cancer event at Ke‘ehi Lagoon Beach Park. Bottom left: UH Cancer Center employees and their family members participated in the Susan G. Komen Hawaii Race for the Cure 10K and 5K events.
The Native Hawaiian Community Advisory Board was convened in 2018 to provide community oversight and input into the research conducted at the UH Cancer Center that involves Native Hawaiians. The Board reviews research findings on health and social issues concerning Native Hawaiians to advise on ways to disseminate the information in Native Hawaiian communities. Under the leadership of Claire K. Hughes, DrPH, the Board is defining how best to work with the UH Cancer Center to address the cancer-related health concerns of Native Hawaiians.

NATIVE HAWAIIAN COMMUNITY ADVISORY BOARD MEMBERS:

KARL VETO BAKER
Kumu Hula
Hālau I Ka Wēkiu

REGINALD HO, MD
Physician
Straub Medical Center

CLAIRE K. HUGHES, DRPH
Retired
Hawai‘i State Department of Health

JODI LESLIE, DRPH, RDN, LDN
Co-owner
Kukui Lifestyle Medicine Clinic

DEBBIE NAKANELUA-RICHARDS
Director, Community Relations
Hawaiian Airlines

NATHAN WONG, MD
Retired Physician
Kaiser Permanente
“The Native Hawaiian Community Advisory Board is appreciative of this opportunity to provide community input for the cutting-edge research conducted here at our University of Hawai‘i Cancer Center. We look forward to working together to improve cancer outcomes for Native Hawaiians and all people of Hawai‘i.”

- NATHAN WONG
As a cancer research education hub within Hawai‘i, the UH Cancer Center provides innovative training and mentorship experiences for our community of students at every age and stage of their career. The UH Cancer Center’s young scientists are encouraged to share ideas and learn in journal clubs, seminars and symposia. High school and undergraduate students explore careers in the life sciences through hands-on cancer research experience during summer internships, and graduate and postdoctoral students enhance their learning through fellowships and training.
Graduate student, Natalija Glibetic, has won multiple awards for sepsis research conducted at the UH Cancer Center in Michelle L. Matter's lab of the Cancer Biology Program.

“I am incredibly grateful for all the support and attention my work has received. Sepsis is the leading cause of death in U.S. hospitals and accounts for 8.5 percent of cancer patient deaths each year, yet there are no sepsis-specific therapies. Native Hawaiians are particularly susceptible to cancer-associated sepsis, so it is crucial to develop these therapies for Hawai‘i,” said Glibetic.

Glibetic’s research focuses on the regulation of vascular leakage in sepsis and cancer-associated sepsis. Glibetic found a protein that is crucial in maintaining blood vessel integrity that blocks sepsis-induced vascular leakage. The protein acts as a key switch from an unhealthy leaky vessel that can induce tissue swelling, multiple organ failure and death of a healthy blood vessel.

People with cancer are particularly susceptible to developing sepsis due to suppression of the immune system that can occur from the cancer itself or from surgery, chemotherapy or radiation therapy used to treat the disease.
HAINING YANG, MD, PHD
iMiG Research Award, for “discovering the mechanisms of asbestos carcinogenesis”

GRANTS

23 years of continued National Cancer Institute designation
OUTSTANDING RECOGNITIONS

LOIC LE MARCHAND, MD, PHD
Highly Cited Researchers
World-class researchers that rank in the top 1 percent by citations for field and year in Web of Science.

JAMI FUKUI, MD
The National Cancer Institute Community Oncology Research Program Representative on the NCI Breast Immuno-Oncology Task Force of the Breast Cancer Steering Committee

MICHELE CARBONE, MD, PHD
iMiG Wagner Medal, for “discovering the role of genetics in the pathogenesis of mesothelioma”

National Institute on Minority Health and Health Disparities Research Institute Scholar

CAROL BOUSHEY, PHD, MPH, RD
Inducted into the Purdue University Department of Nutrition Science Hall of Fame

CARL-WILHELM VOGEL, MD
Elected President of the North American Society of Toxinology

58 principal investigators
126 research projects
$42M awarded total grant funds
(INCREASE OF MORE THAN $1M FROM 2017)
UH CANCER CENTER COORDINATED BREAST CANCER CLINICAL TRIALS MAY CRITICALLY IMPROVE ROUTINE CARE AND TREATMENTS

“These trials are very important because breast cancer is a significant issue in Hawai‘i. Racial and ethnic minority groups are severely under-represented in breast cancer clinical trials in the rest of the United States, so participation of patients from Hawai‘i is doubly important.”

- RANDALL HOLCOMBE, UH CANCER CENTER DIRECTOR

THE ABC TRIAL  
_Aspirin for Breast Cancer Trial_

The ABC trial is an NCI-sponsored national clinical trial provided locally by the UH Cancer Center to determine if the addition of daily aspirin for five years will decrease the likelihood of cancer returning post-treatment for breast cancer patients who are at significant risk of recurrence despite completing all standard treatments.

“There is significant data to support the potential benefits of aspirin in breast cancer survivors. Aspirin is inexpensive and widely available, so this treatment could be used worldwide to improve breast cancer outcomes,” said Jessica Rhee, MD, UH Cancer Center’s Clinical Trials Office medical director.

DIGITAL MAMMOGRAPHY  
_BREAST CANCER CLINICAL TRIAL_

_Tomosynthesis Mammographic Imaging Screening Trial (TMIST)_

Tomosynthesis, also known as 3-D mammography, was FDA approved in 2012 and is becoming more widely used in the United States. However, 2-D mammography has been the standard method for breast cancer screening since 2005. The TMIST trial compares the two different mammography technologies to determine which is better at detecting breast cancers, and more impactful in reducing breast cancer deaths.

“When helplessly watching my mother’s own cancer struggle, I decided to participate in the TMIST clinical trial during my regularly scheduled mammogram at the Queen’s Women’s Health Center. It was only a few questions and a blood test. I felt happy to help because not enough people are taking advantage of this opportunity to be part of a clinical trial sponsored by the National Cancer Institute and provided here as fruit of the partnership between The Queen’s Medical Center and the University of Hawai‘i Cancer Center,” said Cathy Morris, TMIST clinical trial participant.
“Highly skilled medical professionals and women who participated in earlier research and trials are foundational to my remission of cancer. It is now my responsibility and opportunity to participate in ongoing research, namely the aspirin trial, to benefit others diagnosed, and to contribute to the quest of conquering cancer.”

- SANDRA HEE, ABC CLINICAL TRIAL PARTICIPANT
“Lifestyle changes are an important part of preventing recurrence for multiple types of cancers. We are excited to provide these opportunities to our patients in Hawai‘i as another way to support them through their survivorship journey.”

– JAMI FUKUI

Jami Fukui, MD, UH Cancer Center assistant researcher and physician at Kapi‘olani Medical Center for Women and Children is focused on breast cancer research, developing clinical trials protocols, and providing the best cancer care to the residents of Hawai‘i.

Fukui is leading a UH Cancer Center coordinated clinical trial to show how exercise improves the health, fitness and quality of life for breast cancer patients. Data suggests that physical activity may also reduce the risk of breast cancer recurrence. Body composition evaluations are done at baseline, at 12 weeks and then yearly to monitor for any changes. The study is conducted in collaboration with the Rehabilitation Hospital of the Pacific along with the University of Hawai‘i Kinesiology and Rehabilitation Science Department.
The research focus of Jared Acoba, MD, is to identify new treatments for patients with gastrointestinal cancers which includes pancreatic and liver cancers. Acoba has developed clinical trial protocols and participated in oncology cooperative groups as a member of the National Cancer Institute Community Oncology Research Program, and provided cancer care to residents of Hawai‘i as an oncologist at Hawaii Oncology.

Acoba’s latest research involves immunotherapy which has shown promise in a number of cancers including hepatoma. He has developed a clinical trial to test two medications that may shrink tumors by allowing the immune system to destroy cancer cells. The phase II trial will study how the medications work in combination in treating patients with locally advanced or metastatic liver cancer. The UH Cancer Center is the first institution to test the two agents in combination, specifically for hepatoma.

“Hawai‘i has one of the highest rates of hepatoma in the United States. Developing a more effective treatment would significantly improve the care of hepatoma patients in the islands.”

– JARED ACOBA
The UH Cancer Center’s 20BY25 clinical trials education campaign includes public service announcements. The goal of the campaign is to achieve enrollment to cancer clinical trials of 20 percent of all individuals with cancers by 2025. Today’s “standard” treatment was a clinical trial 5-10 years ago. Currently, only three percent of adults with cancer in the U.S. enroll on clinical trials, while children with cancer enroll at a rate of up to 75 percent across the U.S.
**MYTH**
Aren’t clinical trials for cancer treatment really just for advanced stages of cancer when no other treatments are available?

**TRUTH**
The truth is, clinical trials provide the very highest level of care for patients at all stages of cancer, no matter how early or advanced.

**MYTH**
Is it really true that participants in clinical trials for cancer treatment are often treated like guinea pigs?

**TRUTH**
The truth is, there are strict rules about how participants are consented and monitored while on clinical trials. Patient safety and providing the best medical care possible are always the top priorities.

**MYTH**
Aren’t clinical trials for cancer treatment dangerous because they use new medicines?

**TRUTH**
The truth is, while there’s some level of risk, clinical trial drugs go through rigorous testing for safety in humans, and participants are monitored closely for adverse effects.

**MYTH**
Is it true that I’ll only get a placebo if I participate in a clinical trial for cancer treatment?

**TRUTH**
The truth is, placebos are rarely used in cancer clinical trials and every patient on a trial receives at least the standard of care.

**MYTH**
Is it true if I enroll in a clinical trial for cancer treatment, I’ll be locked in and won’t be able to change treatment?

**TRUTH**
The truth is, clinical trial participants can choose to stop participating in the study at any time for any reason and the same high quality of care and monitoring will continue.

Clinical trials offer the very highest level of treatment. Your doctor wants what’s best for you. Ask about participating in a clinical trial. Enroll in a clinical cancer trial and move One Step Closer to cure.
The University of Hawai‘i Cancer Center is the only National Cancer Institute-designated cancer center in Hawai‘i and the Pacific. The Center’s mission is to reduce the burden of cancer through research, education, patient care and community outreach with an emphasis on the unique ethnic, cultural and environmental characteristics of Hawai‘i and the Pacific. The Center is a research organization affiliated with the University of Hawai‘i at Mānoa located in Kaka‘ako.